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TUBERCULOSIS OF THE BREAST

(With Report of Six Cases)

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INTEREST in tuberculosis of the breast lies, first, in its rarity in comparison with other conditions affecting the gland; second, in the difficulty frequently encountered in distinguishing it clinically from neoplasm, simple inflammation and other specific inflammatory conditions of the breast; third, in determining whether the lesion is primary or secondary in the breast; and fourth, of more academic interest, in discovering the site of initial invasion, namely, the alveoli, ductal system, or interstitial tissue. These four points will be elaborated, a review of the literature will be presented, including the majority opinions, and six cases occurring in our surgical practice will be discussed as they are related to these factors.

The subject is not a new one since Sir Astley Cooper⁸ as early as 1829 made reference to scrofulous infection of the breast. He had observed, "in young women, who had enlargement of the cervical absorbent glands, sometimes, though rarely, tumors of a scrofulous nature in their bosoms, confined in most cases to a single tumor in one breast; but in one case, two existed in one breast, and one in the other." The disease as a clinical entity, however, was not definitely established until 1881 when Dubar "laid the foundation on microscopic and bacteriologic grounds."

The incidence of tuberculosis as compared to other conditions of the breast as reported in the literature is rather constant. At the Boston City Hospital during a 25 year period there were examined pathologically 2,297 breasts. The diagnosis was cancer in 986, adenoma in 358, chronic mastitis in 674, abscess in 27, and tuber-

culosis in 14, or 0.6 per cent, of the cases. Bloodgood³ found a similar incidence of 0.6 per cent in his series. Deaver^{9,10} encountered tuberculosis in 0.83 per cent of his breast cases. Berger and Mandelbaum² more recently reporting on 623 cases of diseases of the breast from the Jewish hospital in Brooklyn noted a slightly higher presence of 1.4 per cent. This figure is identical with our findings on reviewing 429 cases which were examined between 1921 and 1935 in the Surgical Section of the Lexington Clinic.

Morgen²⁰ found that the bacillus had been isolated in about 25 per cent of the 439 cases that he reviewed. In the vast majority in which the determination was made the bovine type was encountered. This was Barker's¹ opinion on studying 45 cases from the literature and a study of 15 cases of his own from the University of Michigan. However, cases secondary to pulmonary lesions are apt to be of the human type. The point of entry, whether through abrasions in the skin, by the lymphatics, via the milk ducts, by direct extension from the lungs, or through the blood stream, cannot be determined in all cases. Fricke¹⁰ in support of direct contact, reported the case of a woman with a lump in her breast which had been massaged by a tuberculous husband. The tissue examined after radical removal showed carcinoma and tuberculosis. He believed that the latter had been implanted. Orthman²² saw a case that appeared as a simple furuncle and he believed an excellent example of infection from without. Kramer's case began as an ulceration of the nipple. Morgen²⁰ and Deaver^{9,10} agree with Halsted's¹⁷ conclusion that most lesions are secondary to axillary and mediastinal glands with retrograde extension through the lymphatics. Ingier¹⁹ cited a case in which the inflammation was confined to the walls of an excretory duct. Durante and MacCarty¹² reported a case developing from a pleuro-costal lesion. The work of Nagaskima²¹ in 1925 is probably the greatest single piece of evidence against blood stream dissemination. He did complete necropsies on 34 cases of miliary tuberculosis and did not find one instance of breast involvement after sectioning the whole gland and subjecting it to microscopic study, smear examination and guinea pig inoculation. The instances cited justify the various opinions in regard to the manner in which the disease is contracted. The preponderance of evidence, however, is in favor of lymphatic extension in most cases.

As a matter of added interest it may be said that tuberculosis may be present in association with other conditions of the breast, notably adenoma, fibro-adenoma, and carcinoma. In 1919 Broders⁴ reported 20 cases of tuberculosis with associated carcinoma in various parts of the body, including 2 cases of breast cancer. Smith and

Mason²⁵ in 1926 could find only 18 authentic cases of combined carcinoma and tuberculosis in the same breast. Of particular interest to us is Case 2 in our small series which presents the same picture of the two lesions in the breast tissue and in the axillary lymph glands.

Less controversial than the portal of entry is the classification into primary and secondary tuberculous mastitis. The lesion is considered of primary type when confined to one breast, with or without axillary glandular involvement of the same side and without clinical evidence of active tuberculosis elsewhere. At times it may prove difficult to establish absolutely the primary nature of the

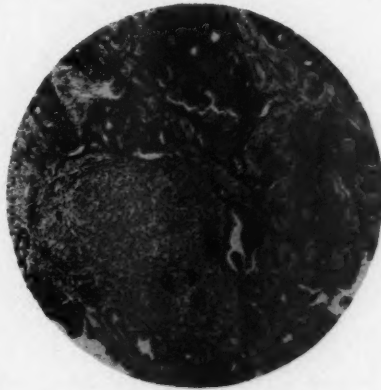


Fig. 1. Tuberculosis in the lower left quadrant, carcinoma in the rest of the field. Section from breast in Case 2.

lesion without an autopsy. The majority of these patients survive and such an examination is never made. Practically, when no other lesion can be demonstrated clinically the condition is assumed to be primary in the breast. In the secondary type, there are manifestations of active tuberculosis in other organs: the lungs most commonly are the source of this spread. The bones, pleura, cervical and mediastinal lymph glands next in frequency give rise to the disease. The relative incidence of the two types of involvement is slightly variable with different series. Fox and Roblee's¹⁵ statistics, however, are representative. They analyzed 39 cases which appeared in the literature between the years of 1914 and 1924 and found 25 primary and 14 secondary infections involving the breasts of 2 males and 37 females.

Another question frequently raised regards the type of tissue first invaded, the acini, ductal system, or connective tissue. A few years ago one of us (A. E. G.) undertook the study of this problem and

examined the pathologic specimens from 24 cases. It soon became evident that primary involvement of one or the other structures in the breast could not be determined consistently. In part this can be attributed to the duration, in most instances several weeks or months. This length of time could be sufficient to allow for extension of the process to all of the histologic elements of the breast. Other investigators have been more positive in their contention for one site or the other as the origin of the disease. Rodman²⁴ believed that it began in the acini rather than the connective tissue and that the lesions were more pronounced in the alveoli than in the ducts.

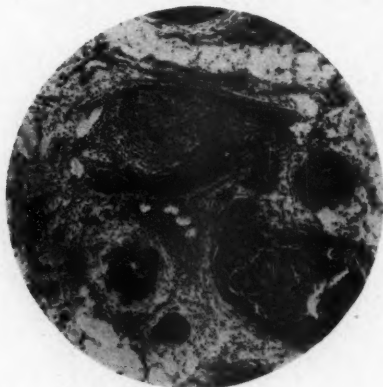


Fig. 2. Tuberculosis inflammation, transversely above center and at periphery between 4 and 5 o'clock. Section from the breast in Case 2.

He further held that if the bacteria entered through the nipple he would expect to find the more superficial ducts and alveoli involved. As early as 1892 Robinson thought that the infection began in the connective tissue and later extended to the epithelium. Cheatle and Cutler⁷ held the same view and in addition expressed belief in blood borne infection. They sectioned whole breasts and studied them microscopically without finding evidence of glands in the axilla, or tuberculosis of the ducts or acini in these specimens. Wilmott Evans¹⁴ believed that the acini and stroma of the gland were equally affected. Many authors in reporting their respective series have made no effort to distinguish the tissue primarily involved believing that the question is of no practical value.

One classification based on the gross pathology falls into three groups.

1. *The nodular group.* In these the usual sequence is nodule, abscess, and sinus formation. About 20 per cent of these cases

evolve in from two to four months. The tubercle in this group is thought to originate in the connective tissue and slowly to enlarge. Caseation frequently takes place with suppuration and sinus formation, statistical studies showing sinuses to be present in from 20 to 50 per cent of the cases. In the 439 cases studied by Morgen²⁰ they were present in about one half.

2. *The sclerosing type.* A large number of patients fall into this group in which there is usually a history of a lump of several years' duration with remissions and exacerbations. This frequently occurs in old people and is characterized by excess fibrosis as in certain pulmonary lesions. Sinuses are rare.



Fig. 3. Tubercle and giant cells just below center. Carcinoma at periphery about 5 o'clock. Section from axillary node in Case 2.

3. *Atypical forms.* These are less frequent. They simulate various other types of lesions in the breast.

On section the gross specimen looks like chronic mastitis with more or less dirty discoloration of the usually pearly white breast tissue. In addition cysts and localized areas of caseation may be observed. A microscopic diagnosis is essential and can be made only when typical tubercles with caseation, epithelioid cells and giant cells with peripherally arranged nuclei, are present. Smears, cultures and guinea pig inoculation may be required as supportive evidence since disintegrating, atrophic acini when surrounded by necrosis and fibrosis from any cause may resemble giant cells. The bacilli, however, are difficult to find in the discharges, particularly in the presence of secondary pyogenic infection. In only 25 per cent of the 439 cases reviewed by Morgen²⁰ was it possible to isolate the bacillus. Practically the same difficulty is encountered in finding the organism in specially stained, fixed tissue preparations.

It is remarkable that only one breast is usually affected. Barker¹ could find only 5 cases in the literature of bilateral involvement. There is an approximately equal distribution on the right and left sides. Of apparent significance is the incidence predominantly in females, between the years of 20 and 40, the period of greatest reproductivity. Coincidentally, most are multipara. The opportunities for trauma as a contributing factor become apparent in this group. The state of general health in 39 cases reviewed by Fox and Roblee¹⁵ was good in 21, fair in 8, poor in 9, and not reported in 1. Of our 6 patients, 5 were in good and 1 was in fair general health.



Fig. 4. Tubercle at center and in upper half, and strands of cancer cells throughout left half of field. Section from breast.

The relatively good general condition of these patients is comparable to that of the average case of pulmonary tuberculosis when first seen and speaks for an early diagnosis.

One must not be prejudiced against making a diagnosis of tuberculosis in a person of apparently good health. The most frequent initial complaint is a tumor in the breast. Pain and tenderness may be present but usually they occur at a later date and indicate suppuration. Twenty to fifty per cent of the lesions develop sinuses. These, likewise, may result from pyogenic infections, but more frequently are associated with tuberculosis. The most frequent diagnosis of this condition is carcinoma. In the early cases this error may be practically unavoidable. A painless, slow-growing localized lump can frequently obscure its identity. If the growth is attached to the skin, if the nipple is retracted, and if there are non-suppurating axillary glands, one is confronted by a diagnostic problem. A variable number will show glandular enlargement; Halsted and LeCount¹⁷ reported 75 per cent, Morgen²⁰ 53.7 per cent, Deaver^{9,10}

75 per cent in the secondary type and 9 per cent in the primary group. A deep seated lump also may be confused with a pyogenic abscess and if incised will drain protractedly. The skin may become fixed, red, and ulcerated to resemble a gumma or actinomycotic abscess. However, these latter two conditions are exceedingly rare. The ray fungus can usually be found in the discharge when it is the inciting factor.

Material obtained by aspiration or from a discharging sinus should be subjected to repeated routine and special stains for examination. A single study is not sufficient. The tubercle bacilli stain



Fig. 5. Another field of tuberculoma and strands of cancer cells from the breast lesion.

with some difficulty. Pyogenic bacteria, on the other hand, are more easily discernible and may be detected at a glance and thus assumed to be the only causative organism unless a complete and thorough study to eliminate the acid-fast bacillus is made. The presence of tuberculosis in other parts of the body may suggest the diagnosis in the breast. The lungs, the lymph glands and the skeletal system should be carefully examined for a possible focus. In the 60 cases reviewed by Barker¹ there was a 16.6 per cent incidence of pulmonary tuberculosis. Chauvin^{5,6} encountered 12 per cent in his series. This association is frequent enough to make x-ray of the chest a part of the routine examination of all patients with dubious breast lesions.

In the treatment of the breast lesion irradiation, heliotherapy, and old tuberculin have been used at various times and with indifferent success. The accepted treatment at the present is surgical in most cases. One's efforts may be restricted to local excision of the mass or given the wider range of simple or radical mastectomy.

Local excision has been advocated by a few surgeons and on occasion we have conformed, for single circumscribed nodular lesions without clinical or other evidence of lymphatic extension. This type of conservation is perhaps justified only in young females where for cosmetic and other reasons one desires to preserve the breast. It is difficult in such a procedure to know accurately if the diseased area has been completely circumscribed and eliminated. The risk of simple mastectomy is so slight that with few exceptions we cannot see the advantage of conserving a breast which may harbor other foci. Radical amputation, except in the instance of an erroneous

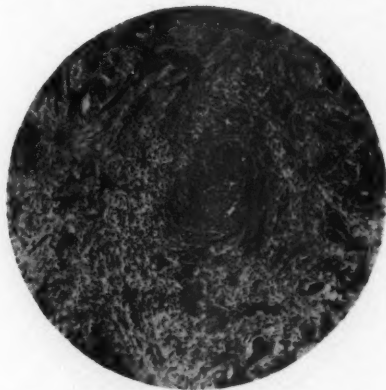


Fig. 6. Tubercle at the center and cancer cells around the periphery of the right half of the field. From axillary node.

diagnosis of carcinoma, is an added risk and does not give better results than simple mastectomy. Occasionally, however, it may be necessary to reflect the pectoral muscles, as in one of our cases, to expose and remove glands distributed along the axillary vessels. The muscle can later be sutured and the function of the arm thereby not impaired. The postoperative treatment is not unusual unless the breast condition is secondary. The treatment of the primary lesion in such cases will be continued as such without interference from the breast lesion.

REPORT OF CASES

CASE 1. Mrs. A. W., aged 43, was admitted to the hospital June 24, 1921. She had always had some soreness and tenderness in both breasts at time of menstruation. Ten years earlier she had been struck in the right breast without apparent ill effect. About June 1 she noticed a small lump just above and to the medial side of the right nipple. There had been no pain.

Examination revealed a well nourished and developed middle-aged woman in apparent good health. The heart and lungs were normal. A small nodule

the size of a filbert, located about $\frac{1}{2}$ inch above and slightly to the inner side of the right nipple was found. The skin was slightly adherent and the mass was tender. No definite glandular enlargements could be seen or felt in the axilla. The left breast was soft, contained no masses and was smaller than the right. Routine urinalysis was normal and the sputum was free from acid-fast bacilli.

Clinical diagnosis: Carcinoma.

Operation: Radical mastectomy.

Pathologic report: Tuberculous mastitis. The breast contained a firm mass 6 by 6 cm. near the center and posterior part of the gland.

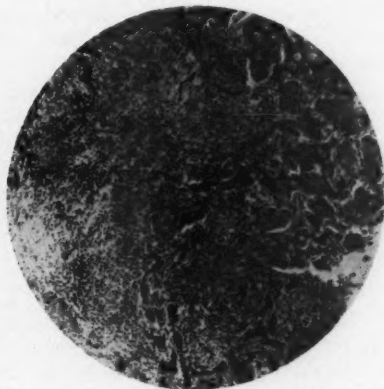


Fig. 7. Cancer in right half of the field, tuberculous inflammation in left half. From axillary node.

CASE 2. Miss N. T., aged 60, appeared for examination Sept. 30, 1925, with a history of a lump in the left breast of three months' duration. She thought it had grown a little since she had first noticed it. Pain had occurred occasionally but had never been severe. She had no other complaints. The only significant fact in the family history was the death of one sister from cancer of the breast. The patient was well nourished and physical examination was negative except for the finding in the left breast. The nipple was encrusted and retracted. The entire breast below the level of the nipple was covered with small black moles. The laboratory tests, including an x-ray of the chest, were negative.

Clinical diagnosis: Carcinoma.

Operation: Radical left mastectomy.

Pathologic report: Sections from the breast showed marked epithelial hyper trophy and hyperplasia originating in the ducts and showing considerable migration. The stroma showed a marked lymphoid infiltration and small areas of caseation surrounded by endothelioid and giant cells. Sections from the axillary lymph nodes showed most of the lymphoid tissue to be replaced by epithelial cells similar to those noted in the breast. Many single and confluent tubercles are also present.

Diagnosis: Medullary carcinoma and tuberculosis of the left breast with axillary metastases of both lesions.

The patient received a course of deep x-ray therapy and survived three years.

CASE 3. Mrs. F. N., widow, aged 52, who had previously been in good health, came to us for examination Mar. 20, 1926. She had had no children during the 26 years of married life. The menopause was uneventful at the age of 40. Five months before consulting us she had noticed a lump in the right breast just above the nipple. It ruptured spontaneously but drained little. This had occurred four or five times. The lump spread and the breast felt "caked." Two weeks earlier pain and another swelling appeared alongside the initial lesion. The local physician had incised the new area without obtaining pus. Pain seemed worse after the attempt at drainage. There were no other complaints, weight was constant, appetite good, and there were no cardiorespiratory symptoms.

Examination showed an obese white female 55 years old who did not appear ill. The head and neck, heart and lungs were normal. There was an ulcerated area 1 by $\frac{1}{2}$ by 1 inch in the upper and inner part of the right breast with a recent operative scar crossing it. There was thickening but no definite mass. The nipple was not retracted, the breast was large, pendulous and of equal size to the left.

Preoperative diagnosis: Carcinoma? Chronic mastitis?

Operation: Wide excision of the lesion.

Pathologic report: Sections showed a marked inflammatory reaction with considerable fibrosis and areas of endothelioid cells and giant cells of the foreign body type. Small areas suggesting caseation are apparent.

Diagnosis: Tuberculous mastitis.

The wound healed and the breast gave no further trouble. A few months later the patient returned because of backache. An x-ray of the spine revealed hypertrophic arthritis. The breast continued free from trouble.

CASE 4. A. B., a colored woman, aged 33, was first seen Jan. 20, 1928. She had had two husbands, having been married a total of 20 years. During that time she had had 7 miscarriages and 1 stillborn child. It was not relative to this matter, nor to her general health which she considered good, that she sought medical advice. She was chiefly concerned with a lump in the left breast which had been present for about three years. Its size had remained more or less constant until 6 months earlier when growth became rapid. Pain, previously an occasional occurrence, was now more constant and severe and it radiated down the arm. She had no other complaints, considered her appetite normal, weight constant and was free from cardiorespiratory distress.

Examination showed an apparently healthy colored woman. Her teeth were carious. There was a cystic adenoma 1 by 2 cm. in the upper and outer quadrant of the left breast. It was freely movable and slightly tender. The overlying skin and nipple were normal. There were no axillary glands. The only significant laboratory test was a 4+ Wassermann and Kahn.

Clinical diagnosis: Adenofibroma.

Operation: Local excision of tumor.

Pathologic report: Frozen section was made and the tissue was reported non-malignant. The gross specimen was described as 5 cm. in diameter. It was moderately firm, cut with resistance and the cut surface was pearly white in color. Near the surface there was an area presenting a yellowish color.

Histopathology: Sections from the yellowish area showed a marked inflammatory reaction with areas of endothelioid and giant cells surrounded by lymphocytes.

Diagnosis: Adenofibroma of breast. Tuberculous mastitis.

The wound broke down, drained several days, but subsequently healed.

CASE 5. Mrs. C. T. E., aged 56, was referred to us for examination Mar. 14, 1935. She had been married twice. Her first husband had died of tuberculosis 29 years previously, after 9 years of married life. She had three children, the youngest 16 years old. Her health had been good. Her only complaint was of a tumor under the left arm of 2 years' duration. When first noticed they were considered enlarged glands in the axilla. They remained stationary until the previous fall when they had begun to enlarge. They became sore, tender and painful on using the arm.

Examination showed a thin woman with the chief finding in the left breast. It was diffusely enlarged, two to three times greater than the right. The skin over the convex portion was reddish in color and glossy but without orange peel dimpling. A third sound was heard over the mitral area; otherwise the heart was normal. An x-ray of the chest showed the heart slightly larger than normal and the lungs free of tuberculosis.

Preoperative diagnosis: Tuberculosis of the left breast with axillary involvement.

Operation: Simple mastectomy. It was necessary to cut and reflect the pectoralis major muscle in order to remove the glands which extended to and surrounded the axillary vein.

Pathologic report: The specimen consists of the left breast and axillary tissue. The breast is rather diffusely indurated. A large mass of firm glands with caseous centers was found in the axilla.

Histopathology: Sections from the breast show a rather diffuse miliary tuberculosis but no large tuberculous mass or areas showing old tuberculous inflammation could be found. Sections from the glands in the axilla show extensive tuberculous inflammation with caseation.

Diagnosis: Tuberculous mastitis, miliary. Tuberculous lymphadenitis, axillary.

She returned July 12 complaining of severe pain under the right rib margin of three months' duration, without cough, sputum, fever, dyspepsia, jaundice or colics, but there had been progressive weight loss. On examination the chest was negative but there was fulness and a sense of resistance in the upper right abdomen which extended to the lumbar region. She was advised to enter the hospital for complete study but failed to return.

CASE 6. C. B., a colored woman, 28 years of age, was admitted to the hospital June 25, 1934. She had been married 12 years and had four living children. The family history was significant in that her father had died of tuberculosis and one brother and one sister had recovered from the disease. Her complaint was directed to the right breast. It had never seemed quite

normal, her babies had been unable to nurse it and for about ten years she had experienced a vague sense of soreness. Within the preceding seven weeks definite pain had occurred, swelling appeared and slowly increased. Two weeks previously a small incision had been made by her physician and the breast had continued to drain slightly.

Careful investigation of the systems revealed no cardiorespiratory, gastrointestinal or urinary complaints. Her menses, habitually regular, had not occurred for six months.

Examination revealed a fairly well nourished and developed colored female of small stature. The right breast appeared smaller and rested at a higher level by 5 cm. than the left. Its lower half was indurated and tender with several apple jelly-like areas 0.5 cm. in diameter underlying the areola. An ulcer 1 cm. in diameter was just inferior to these. Only watery secretion could be expressed. The nipple and axilla were normal. The uterus was enlarged to the size of a six months' pregnancy. The laboratory tests, including blood Wassermann, sputum, smears from the breast ulcer, urine and x-ray of the chest, were normal and showed no evidence of tuberculosis.

Clinical diagnosis: Tuberculous mastitis.

Operation: A simple mastectomy was done after a positive diagnosis by frozen section.

Diagnosis: Tuberculous mastitis.

The wound healed by first intention and the patient was dismissed from the hospital on the tenth postoperative day.

She was seen again, upon request, Dec. 2, 1937, for re-examination. Her health and weight had been better than for years. There were no complaints. The breast was healed, there were no glands. Laboratory studies including routine blood, urine and x-ray of the chest were normal.

The following case showed no breast involvement and rightly has no place in this series. It is included, however, more to show the outcroppings and vagaries of pulmonary tuberculosis, and its value as a differential diagnostic consideration.

CASE 7. Mrs. E. A., a widow, aged 72, was first seen June 18, 1935. She had been married 22 years, widowed 24 years, had had 6 children, 5 of whom were living and well. One had died at the age of 32 years with flu. Her family and past history were irrelevant. Her chief concern was a lump in the right side just below the breast. Three months previously she had noted soreness in this area. Two weeks before she first noted swelling. Dull and occasional shooting pains had been present since the appearance of the lump. There had been no injury to the breast. She had nursed all of her children except the last one. She had "caking" of the right breast on one occasion years ago. There was no cardiorespiratory or other complaint.

Examination showed a woman 72 years old of apparent good health and preservation. The heart sounds were normal and the lungs were clear throughout. The breasts were symmetrical. The nipples were not retracted and there was no discharge. There were no masses in the breast proper but just below the crease of the right breast and to the inner side was a firm mass 2.5 cm. in diameter fixed to the underlying muscles. There were no palpable axillary glands. The overlying skin was slightly reddened.

	White	White	White	Colored	White	Colored	
Case No.	1	2	3	4	5	6	
Primary	+	+	+	+	0	+	5
Secondary	0	0	0	0	+	0	1
Age	43	60	55	33	56	28	45.8 av. years
Sex	F	F	F	F	F	F	6 F. M 0
Family History	0	0	0	0	Husband died of TBC.	Father, 1 brother, 1 sister died TBC.	Positive in 2
Previous Health	Good	Good	Good	Good	Fair	Good	Good 5 Fair 1
History of Trauma	+	0	0	0	0	0	1
Duration	3 weeks	3 months	5 months	3 years	2 years	7 weeks to 10 yrs.?	Av. 17 weeks
Pain at any time	0	+	0	++	++	+	4
Sinuses	0	0	+	0	0	+	2
Civil State	Married, no children	Single	Married, no children	Married, 7 children	Married, 3 children	Married, 4 children	5 Married, 1 Single
Affected Breast	R	L	R	L	L	R	3 rt. 3 lt.
X-ray of Chest	Not done	Negative	Not done	Not done	Negative	Negative	3 neg. 3 not done
Clinical Diagnosis	Carcinoma	Carcinoma	Mastitis	Adeno-fibroma	TBC. mastitis with axillary glands	TBC. Mastitis	TBC. 2
Pathological Diagnosis	TBC. mastitis	TBC. mastitis & carcinoma	TBC. mastitis	TBC. Mastitis & adeno-fibroma	Same	Same	
Treatment	Radical amputation	Radical amputation	Excision	Excision	Simple amputation	Simple amputation	
Results	Good	Death after 3 years from cancer	Good	Good	Breast good, Probably TBC. kidney later	Good	

Laboratory findings were as follows: Routine blood count red blood cells 4,260,000, white blood cells 6,300, hemoglobin 77 per cent. Urine negative chemically and microscopically. Wassermann and Kahn negative. X-ray⁷ of chest: A small healed tuberculous lesion in the upper part of the right lung.

Clinical diagnosis: Probable carcinoma.

Operation: Removal of tumor. After removal the tumor was found to be composed of caseous material with one channel extending through the chest wall, apparently into the thoracic cavity. The skin and subcutaneous tissue around the tumor were excised and the tracts were dissected out and painted with iodine. Wound closed without drainage.

Pathologic report: The specimen consists of skin and subcutaneous fat removed from the anterior chest wall. Sections show marked tuberculous inflammation with extensive caseation.

Diagnosis: Tuberculous inflammation.

COMMENT

The six cases reported have several features of interest. There were 5 of primary and 1 of secondary tuberculous mastitis, all occurring in women of an average age of 45.3 years. Case 4 represented a fibroadenoma with an area of tuberculous caseation. Case 5 revealed a minimal breast involvement with extensive axillary glandular invasion and might be considered primarily glandular. Pleuro-costal extension apparently occurred in Case 7 since there was no breast involvement, but a sinus communicating with the chest cavity and x-ray evidence of a small area of tuberculosis in the upper right lung, reported inactive or probably healed. Smith and Mason²⁵ could find reported in the literature only 18 authentic cases of combined carcinoma and tuberculosis in the same breast. It is significant that in our small series of 6 cases, one such should be included. The pathologic specimen revealed the two lesions in the breast tissue and in the same lymph glands.

Our treatment varied from local excision, simple to radical mastectomy with universally good results. The patient with carcinoma survived three years to die of metastases.

SUMMARY

1. Tuberculosis constitutes from 0.6 to 1.4 per cent of all surgical conditions of the breast.
2. The disease is predominant in females of middle age, who have borne children.
3. A clinical classification is made of primary and secondary tuberculous mastitis. It is primary where no other lesion can be demonstrated and secondary when there are manifestations of active tuberculosis in other organs.

4. Pathologically the cases may be grouped as nodular, sclerosing or atypical.

5. Other lesions of the breast may be coincidental, but cancer rarely.

6. The best effective treatment is surgical with removal by local excision, and preferably simple amputation. The results are universally good with a primary breast involvement.

7. Six cases are presented. They represent the various regular features and some of the unusual.

BIBLIOGRAPHY

1. Barker, H. B.: Tuberculosis of the Mammary Gland, *Arch. Surg.* 13: 435-444 (Sept.) 1926.
2. Berger, L., and Mandelbaum, H.: Tuberculosis of the Breast, *Ann. Surg.* 103: 57 (Jan.) 1936.
3. Bloodgood, J. C.; Kelley, H. A., and Noble, C. P.: *Gynecology and Abdominal Surgery*, 2: 211. W. B. Saunders, 1908.
4. Broders, A. C.: Tuberculosis Associated with Malignant Neoplasia; Report of Twenty Cases (Two of Breast Cancer), *J. A. M. A.* 72: 390, 1919.
5. Chauvin, E.: Quoted by Barker.
6. Chauvin: *Arch. Franco-Belges de Chir.* 26: 1000-1035 (Nov.) 1923.
7. Cheate, G. Lenthal, and Cutler, Max: *Text, Tumors of the Breast*, London: Edw. Arnold & Co., 1931.
8. Cooper, Astley: *Illustrations of Diseases of the Breast*. London, 1829.
9. Deaver, J. B., and McFarland, J.: *Text, The Breast: Its Anomalies, Its Diseases and Their Treatment*. Philadelphia, 1917; London Ed. 1918.
10. Deaver, J. B.: Tuberculosis of the Breast, *Am. J. M. Sc.* 147: 157-185, 1914.
11. Dubar: *These des tubercules de la mamelle*. Paris, 1881. (Quoted from Deaver.)
12. Durante, L., and MacCarty, W. C.: Tuberculosis of the Breast; A Report of 10 Cases, *Ann. Surg.* 63: 668-671, 1916.
13. Elkin, D. C.: Tuberculosis of the Breast, *Ann. Surg.* 77: 1923.
14. Evans, Wilmott: *Text, Diseases of the Breast*. University of London Press, Ltd. Pp. 135-142, 1923.
15. Fox, B., and Roblee, M. A.: Tuberculosis of the Mammary Gland (Review of literature and report of six additional cases), *Ann. Surg.* 84: 678-690 (Nov.) 1926.
16. Fricke: Quoted by Morgen.
17. Halsted and Le Count: *Ann. Surg.* 28: 685, 1898.
18. Hinton, J. W., and Lawson, T. C.: Tuberculosis of the Breast, *Ann. Surg.* 83: 170-174 (Feb.) 1926.
19. Ingier: *Virchow's Arch. f. path. Anat. & Phys. & f. Klin. Med.*, p. 202, 1910.
20. Morgen, M.: Tuberculosis of the Breast, *Surg., Gynec. & Obst.* 53: 593-605 (Nov.) 1931.
21. Nagaskima: *Arch. f. path. Anat.* 254: 184, 1925.
22. Orthman: Quoted by Morgen.
23. Raw, Nathan: Tuberculosis of the Breast, *Brit. M. J.* 1: 657-658 (April 12) 1924.
24. Rodman, W. L.: *Text, Diseases of the Breast (With Special Reference to Cancer)*, pp. 43-56. Philadelphia: P. Blakiston's Son & Co., 1908.
25. Smith, L. W., and Mason, R. L.: The Concurrence of Tuberculosis and Cancer of the Breast, *Surg., Gynec. & Obst.* 43: 70-72 (July) 1926.

POSTOPERATIVE PNEUMOTHORAX

Report of Case Following Partial Gastrectomy

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A SURPRISINGLY large number of reports and articles on "massive collapse" have been written into the literature since W. Pasteur described his six cases of atelectasis due to diphtheritic paralysis in 1890. These articles appear under various titles, such as: postoperative massive collapse, postoperative atelectasis, postoperative massive collapse due to atelectasis, and massive atelectasis. The authors all appear to consider massive collapse as synonymous with the term atelectasis. Pneumothorax, in the articles reviewed, is seldom mentioned and if mentioned at all it is only to state that the type of massive collapse due to atelectasis is entirely different from that produced by pneumothorax.

Such a loose conception of the term collapse seems not only ambiguous but definitely misleading especially to the student, as anyone must concede that pneumothorax is capable of producing more complete collapse than atelectasis. This is recognized by the men treating tuberculosis and we find their literature full of articles on collapse therapy, meaning not massive atelectasis but actual collapse of the lung by artificial pneumothorax or other operative procedure. It follows then that the term massive collapse in its unqualified state is misleading, as such a collapse might be due either to atelectasis or to pneumothorax, although the findings in each case would be quite different.

In a review of the literature of the last eighteen years, I was able to find reports of two cases of pneumothorax following laparotomy. For purpose of comparison and discussion our case of pneumothorax following partial gastrectomy is presented in conjunction with a rather typical case of massive atelectasis following appendectomy. The two cases were similar clinically in that they were both ushered in by a chill, which was followed by pain in the chest, dyspnea, hyperpnea, increase in pulse rate, and cyanosis. From this point on, however, the findings upon physical examination and x-ray were contradictory.

REPORT OF TWO CASES

CASE 1.—J. R. P., a lumberman, aged 62, was seen for the first time on Feb. 21, 1938, complaining of "cramps in the stomach." He had lost 27 pounds in the previous ten months and was also suffering with weakness and anorexia. He had had a vague type of indigestion for 20 years, but the epigastric pain had begun suddenly a year earlier.

He was poorly nourished and dehydrated. His blood pressure was 98/76. Fluoroscopic examination of the chest revealed a faint, fusiform, pulsating shadow to the left of the aortic arch suggesting a beginning aneurysm or aortitis: the Kahn test however was negative. Other laboratory examinations revealed a moderate secondary anemia, an absence of all free hydrochloric acid in the gastric contents with a low total acidity.

X-ray studies of the stomach showed an annular deformity involving part of the pars media and all of the pyloric antrum. This led to the diagnosis of



Fig. 1. First postoperative day: Almost complete collapse of right lung. Note widening of intercostal spaces and downward displacement of diaphragm on affected side with displacement of heart toward well side. (J. R. P.)

an extensive annular carcinoma. An exploratory laparotomy was advised. The patient was admitted to the hospital on March 1 to be prepared for operation with transfusion, special diet, gastric lavage and intravenous saline.

On March 8, he was operated on under gas-ether anesthesia and a large carcinomatous mass was found involving over half the stomach including all the pylorus. A Bilroth-II type of resection with gastrojejunostomy was done. Another transfusion of 500 c.c. of citrated blood was given immediately after operation and Wangenstein suction was begun. His postoperative condition was good: pulse was 74 and respiration 14.

The day of operation was uneventful until about 10:45 p. m. About that time the patient had a chill lasting 20 minutes (Temperature 103.4, pulse irregular) and he complained of generalized pain in the abdomen.

The morning of the first postoperative day Mr. P. complained of generalized pain in the abdomen and chest and began coughing occasionally. By 3:00 p. m. he was slightly dyspneic and cyanotic. Temperature was 104 (rectal) and pulse 136. Physical examination revealed absent breath sounds in the right chest but no dulness. X-ray revealed complete collapse of the right lung with the heart displaced to the left side. The diaphragm was pushed down on right and intercostal spaces increased in width. There was considerable mottling in the region of the hilum of the left lung resembling bronchopneumonia. The patient was placed in an oxygen tent, which promptly relieved the cyanosis.

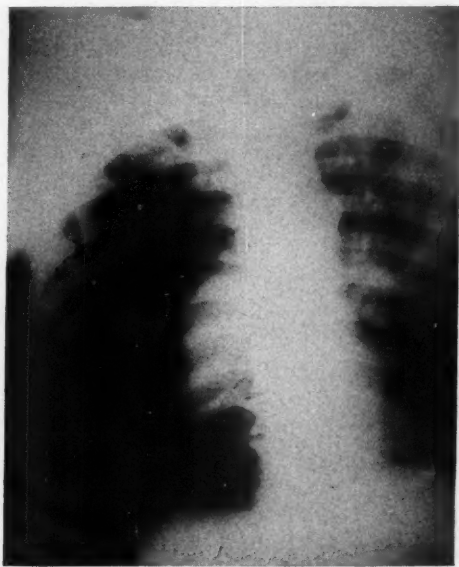


Fig. 2. Ninth postoperative day: The lung shadow on the affected side has become definitely decreased in size revealing more complete collapse than in fig. 1. (J. R. P.)

After the first four or five hours oxygen was given only at intervals for the relief of cyanosis.

On the second postoperative day lavage produced bile and old blood of offensive odor. At 9:30 p. m. the patient began expectorating mucus streaked with blood. On the third day he was still showing slight cyanosis and slightly labored respiration when not under the oxygen tent. On the fourth day x-ray examination was repeated and the findings were unchanged. The nasal tube was removed. On the fifth day the patient expelled a large amount of gas per rectum and a small dark brown liquid stool.

On the sixth day the patient developed a diarrhea, having eleven stools in 24 hours. The diarrhea continued the next day with ten stools. The patient was given 500 c.c. of citrated blood. The following day the diarrhea had greatly improved.

On the ninth postoperative day x-ray of the chest revealed the right lung collapsed still further. The left lung appeared to be clearing. On the tenth day the patient coughed occasionally producing purulent sputum. At 10:30 a. m. on the eleventh postoperative day the chest was aspirated, 1,640 c.c. of air being removed with closed aspirating system. Immediately following the aspiration x-ray revealed that the right lung had expanded sufficiently to fill half the chest. At 1:10 p. m. the patient had a severe chill: temperature 102.1, pulse 114, respiration 28. In order to determine whether there had been a

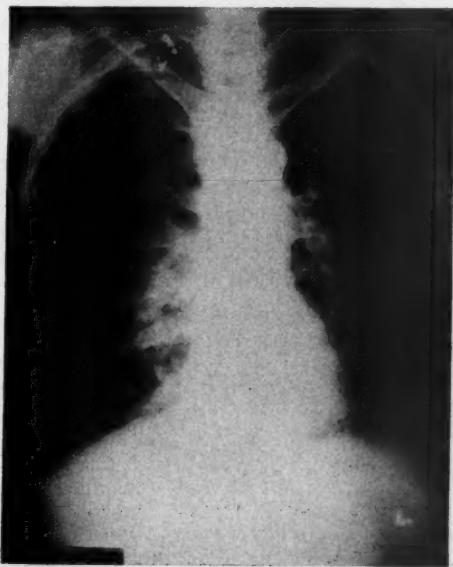


Fig. 3. Eleventh postoperative day: Immediately after aspiration of 1,640 c.c. of air from right chest: Re-expansion of right lung to within about two thirds of normal volume. Note that diaphragm, rib, and cardiac shadows are returning to their normal relationships. (J. R. P.)

reaction to the aspiration or another pneumothorax, the x-ray was repeated but revealed the lung unchanged, still expanded.

On the twelfth day there was occasional expectoration of purulent sputum. The wound was dressed and all sutures removed. There was no drainage. The patient by this time was eating soft poached eggs, cream and chicken broth, pabulum, etc.

On the thirteenth postoperative day the patient was coughing repeatedly producing quantities of purulent sputum. General body radiation with ultra-violet was begun and convalescence proceeded uneventfully.

On the twenty-third postoperative day, Mr. P. was discharged. He returned two weeks later reporting that he gained weight since leaving the hospital, had a good appetite, and was feeling well. Fluoroscopy and x-ray of the chest

at that time revealed the lung completely expanded and pneumothorax absent except in a three-fourths inch crescent-shaped space over the apex. The lung tissue appeared normal.

CASE 2.—Miss J. W., aged 20, underwent an appendectomy on Dec. 10, 1934, under gas ether anesthesia: operation time 15 minutes. There was no significant change in pulse or respiration during operation. Her postoperative condition was good. The temperature not over 99.6 until December 12. On this date at 8:45 p. m. the patient suddenly developed dyspnea, severe pain in the upper chest and about the heart. Breath sounds were absent over the



Fig. 4. Five weeks postoperative: Complete re-expansion with exception of small crescent shaped area at right apex. (J. R. P.)

entire right chest. There was dulness in the upper third. The heart was markedly displaced to the right and the diaphragm was elevated on the right.

X-ray revealed the particular ground glass haze which is characteristic of atelectasis. The patient was treated with oxygen and carbon dioxide inhalations and opiates.

Three days later breath sounds were audible over the entire chest. There were no rales and the general condition was much improved.

On December 17 the lung had completely re-expanded; this was verified by x-ray examination.

DISCUSSION

These two cases when analyzed and compared tend to demonstrate the major points of differentiation in collapse due to massive atelectasis and to pneumothorax.

In massive atelectasis there is dulness on the affected side usually with hyperresonance on the well side. The heart and mediastinum are displaced toward the affected side, the diaphragm on the affected side is elevated and the rib spaces are narrowed. Finally,

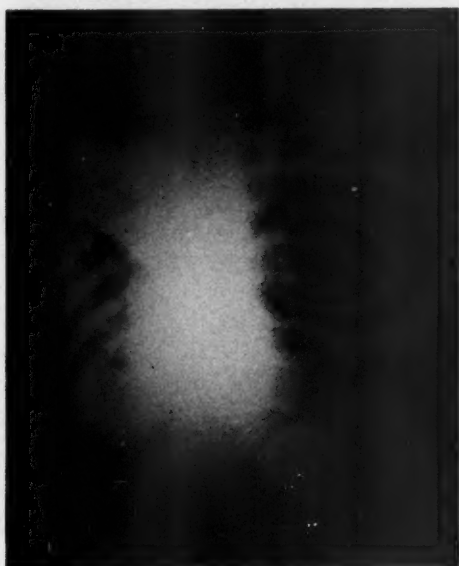


Fig. 5. Massive atelectasis right lung. Note narrowing of intercostal spaces on right with compensatory widening on left. Note also displacement of mediastinum toward affected side as well as marked elevation of diaphragm. (J. W.)

there is a very marked increased density due to compression of the lung, producing roentgen-opacity.

In contrast to this in pneumothorax there is hyperresonance on the affected side, the heart and mediastinum being displaced toward the well side, the diaphragm lowered and the intercostal spaces widened on the affected side. The x-ray reveals no tissue shadow except near the hilum where the collapsed lung is found. In both of these conditions the major changes and findings are produced by changes in intrapleural pressure.

In massive atelectasis there is an actual decrease in size of the lung, which is already suspended in a negative pressure environ-

ment. Air does not enter the pleural space to relieve the negative pressure. This, of course, produces an increase in negative pressure through enlargement of the interpleural space which is followed by a corresponding approximation of the anatomic walls of the space in so far as their elasticity permits.

Conversely in pneumothorax the negative pressure seal is broken, air is allowed to enter the pleural cavity balancing the internal

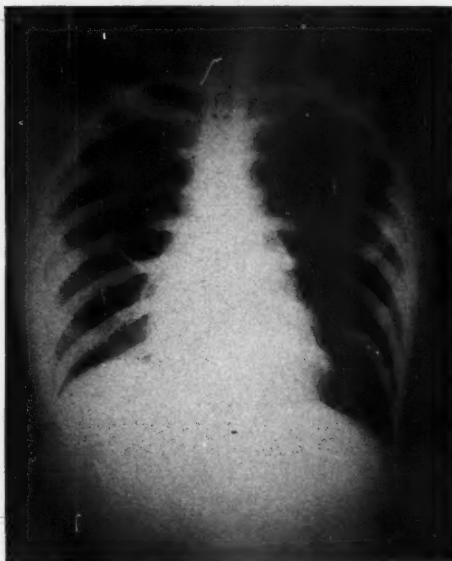


Fig. 6. Five days after fig. 5: Re-expansion of right lung and return of comparatively normal relationships. (J. W.)

and external pressures and allowing the walls to expand to some extent. In the case of valvular pneumothorax some positive pressure may develop. In addition the mediastinum is pushed toward the well side where a negative pressure still exists. It is noteworthy in the case of pneumothorax reported that the collapsed lung became even smaller after an interval of ten days, finally necessitating aspiration of 1,640 c.c. of air in order to produce re-expansion of the lung. This probably indicates that there had been present a valvular pneumothorax which closed when the pleural pressure became sufficient to seal the bronchopleural opening and it then became completely healed. Dorwart in reporting his case of post-operative pneumothorax concludes that there must have been an unrecognized pre-existing partial atelectasis. The resultant increase

in negative pressure on the affected side became acute enough to cause rupture of the lung in a weakened spot thereby producing the pneumothorax. This seems to be a very proper explanation in view of what is known concerning the etiology of spontaneous non-tuberculous pneumothorax and of massive atelectasis.

Most authors now agree that there are certain predisposing factors to atelectasis. It occurs more often in men than women, more often in older patients, in those with long operations than short ones, and particularly where upper abdominal incisions and heavy adhesive strappings are used. It is generally conceded that the most likely cause for massive atelectasis is the actual plugging of a bronchus by a plug of mucus or the closure of the bronchus by inflammatory swelling of the mucous membrane due to aspirated mucus. This type of etiology has been proven in many cases by the immediate cure of the condition on bronchoscopy and aspiration.

Numerous suggestions have been made to aid the surgeon in avoiding this complication:

1. Except in cases of emergency, no patient with any type of pre-existing chest abnormality should be operated upon until after adequate treatment.
2. Long operations, requiring upper abdominal incisions, should be avoided if possible, especially in the case of elderly males.
3. When not otherwise contraindicated, the Trendelenburg position during operation and afterward until the patient has reacted is advantageous in promoting drainage of secretions. This particular factor is enhanced by repeated aspiration with suction machine of accumulated nasopharyngeal secretions during operation.
4. Strapping of the upper abdomen and chest in such a way as to limit respiratory movements should be avoided.
5. Every effort should be made throughout the preoperative, operative, and postoperative periods to maintain general body tonus as loss of tonus is considered one of the predisposing factors in atelectasis.
6. Changes in position, frequent breathing exercises, and stimulating inhalations of carbon dioxide and oxygen are valuable post-operative prophylactics.

The treatment of atelectasis once developed consists mainly in measures designed to evacuate or dislodge mucus accumulations. These are the *Santé* maneuver, inhalations of carbon dioxide and oxygen, or bronchoscopy and aspiration. The last named seems to be most effective. In many cases there is spontaneous recovery

without any specific treatment, and in fact without the disease ever having been recognized.

Spontaneous nontuberculous pneumothorax is thought to be due to congenital emphysematous or scar tissue valve vesicles which rupture when for any cause additional strain is placed on the lung tissue. The prognosis in spontaneous non-tuberculous pneumothorax is considered uniformly good, recovery usually taking place without special therapy in from six to ten weeks. Aspiration is generally not advisable except in the cases where profound respiratory embarrassment is caused by the development of positive pressure on the affected side. In these cases continuous aspiration may be found necessary. Most observers advise no treatment other than rest and observation.

It would appear expedient, however, to employ aspiration in those cases where no tendency toward re-expansion is observed as there has been at least one case of spontaneous pneumothorax with complete collapse reported which existed unchanged over a period of seventeen years. Since it has been pointed out that massive atelectasis may precede postoperative pneumothorax or might be partially responsible in certain cases for causing it, precautions used in prevention of massive atelectasis would apply to the prevention of spontaneous postoperative pneumothorax.

SUMMARY

1. A case of spontaneous pneumothorax following partial gastric resection has been reported.
2. A case of massive atelectasis following appendectomy has been reported for purposes of comparison and discussion.
3. The concepts generally held concerning the etiology, diagnosis, and treatment of massive atelectasis and spontaneous nontuberculous pneumothorax have been briefly summarized.

CONCLUSIONS

1. The term collapse as it is ambiguously applied to massive atelectasis on the one hand and to true compression of the lung by artificial pneumothorax on the other, without consideration of collapse due to spontaneous pneumothorax is misleading.
2. Careful examination and observation of patients with postoperative pulmonary complications has brought to light many cases of massive atelectasis, so that this particular condition has come to be recognized as one of the most frequent pulmonary complications.

3. Few cases of spontaneous pneumothorax following laparotomy have been reported in recent years. The possibility of pneumothorax should be recognized and looked for. X-ray of the chest is necessary for accurate diagnosis.

4. Little is definitely known concerning the etiology of spontaneous non-tuberculous pneumothorax, whether postoperative or otherwise.

REFERENCES

1. Battle, R.: Postoperative Pulmonary Complications with Special Reference to Conditions of Atelectasis and Pneumonia, Review of literature, St. Thomas's Hosp. Gaz. 35: 368-381 (June) 1936.
2. Henderson, Y.: Atelectasis, Massive Pulmonary Collapse and Related Postoperative Conditions, München med. Wchnschr. 83: 305-309 (Feb. 21) 1936; also Presse méd. 44: 425-428 (March 14) 1936.
3. Jones, O. R., and Burford, G. E.: Massive Atelectasis Following Cyclopropane Anaesthesia, J. A. M. A. 110: 1092-1095 (April 2) 1938.
4. Burford, G. E.: Pulmonary Complications after Cyclopropane, J. A. M. A. 110: 1087 (April 2) 1938.
5. Dorwart, F. G.: Postoperative Pneumothorax: Case Report and Consideration of Factors (Especially Pulmonary Atelectasis) That Might Be Concerned in its Etiology, J. Oklahoma M. A. 28: 205-207 (June) 1935.
6. Duggal, A. N., and Dogra, J. R.: Massive Collapse Due to Spontaneous Pneumothorax, Indian M. Gaz. 70: 29-30 (Jan.) 1935.
7. Beecher, H. K.: Effect of Laparotomy on Lung Volume. Demonstration of New Type of Collapse, J. Clin. Investigation 12: 651-658 (July) 1933.
8. Faulkner, W. B., Jr., and Faulkner, E. C.: Postoperative Massive Collapse: Cause, Prevention and Treatment, Northwest Med. 32: 87-92 (March) 1938.
9. Carpenter, W. H.: Atelectasis, Massive Collapse and Related Postoperative Conditions, Bull. New York Acad. Med. 11: 639-656 (Nov.) 1935.
10. Nagel, G. W.; Judd, E. S.; Parker, B. R.; Baurmann, Winfred H., and Peiper, H.: A Review of Abdominal Surgery, Arch. Surg. 19: 526-566 (Sept.) 1929.
11. Riebel, F.: Mechanism of Massive Collapse of Lung, M. J. & Rec. 128: 321-324 (Oct. 3) 1928.
12. Tanturia, C. A.; Itoiz, O. A., and Rugiero, H. R.: Spontaneous Nontuberculosis Pneumothorax Following Surgical Therapy of Duodenal Ulcer, Rev. Asoc. méd. argent. 40: 1303-1313 (Sept.) 1935.
13. Bassel, P. M.: Spontaneous Pneumothorax, Texas State J. Med. 32: 696-700 (Feb.) 1937.
14. Wilson, J. L.: Spontaneous Pneumothorax, Internat. Clin. 1: 157-175 (March) 1937.

RENAL TUBERCULOSIS

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THE study and management of the patient suffering from tuberculosis of the kidney has occupied the minds of the medical profession for many years especially those of the urologists,⁵ since it is their special duty to prove not only the presence of this infection, but its exact location and extent as well. Controversies have naturally arisen and have been centered chiefly about four questions. 1. How does the tubercle bacillus reach the kidney? 2. Is the infection unilateral or bilateral? 3. Does tuberculosis of the kidney heal spontaneously? 4. Does the tubercle bacillus appear in the urine in cases where the kidneys are not infected?

At present these questions have been answered to the satisfaction of the great majority of urologists: only occasionally do articles appear in the literature expressing any doubt. Harris¹ (fig. 1) has outlined graphically the probable mode of entrance and the paths traveled by the organism to reach the kidney. Furthermore this author in studying the occurrence of urine positive for tubercle bacilli in the presence of bone and joint tuberculosis found that in 43 such adult patients, 37 per cent had positive urine and that in 67 children only 13.8 per cent had positive urine but that, on the other hand, in 49 tuberculous children not having some bone or joint involvement only 8.8 per cent had the organism in the urine. It is significant, however, that in these positive cases either miliary tuberculosis or tuberculous meningitis was found. He also found some evidence of healing in pathologic specimens.

Addison² concluded from his studies of these questions that: 1. Tuberculosis of the kidneys occurs at any age from infancy onward. 2. It is hematogenous in origin and is primarily bilateral in every instance. 3. In early stages it is without symptoms and may be discovered only by microscopic examination of the urine and inoculation of guinea pigs. 4. It may not develop or give any signs or symptoms for many months or even years. 5. Many of these early infections become cured. 6. Tuberculosis of the kidney is comparatively common in association with bone and joint tuberculosis.

Band³ investigated 174 cases of extra urinary tuberculosis and found that in 25 (14.4 per cent) the urine was positive even though signs and symptoms of renal involvement were lacking. Five of these positive cases came to autopsy and upon section of the kidneys,

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the infection was found to be bilateral in every instance. Helmholtz and Milliken⁴ after their study of the disease in children state that the organisms were not found in the urine without renal lesion.

Medlar and Sasano⁵ carried out a series of experiments using rabbits and guineapigs with special reference to excretory bacilluria. In the rabbits used infection was found in 100 per cent but in only two of the animals were lesions found in the kidneys and in these only a few small tubercles in which no organisms could be found. Microscopic examination of the rabbit urine failed to demonstrate any

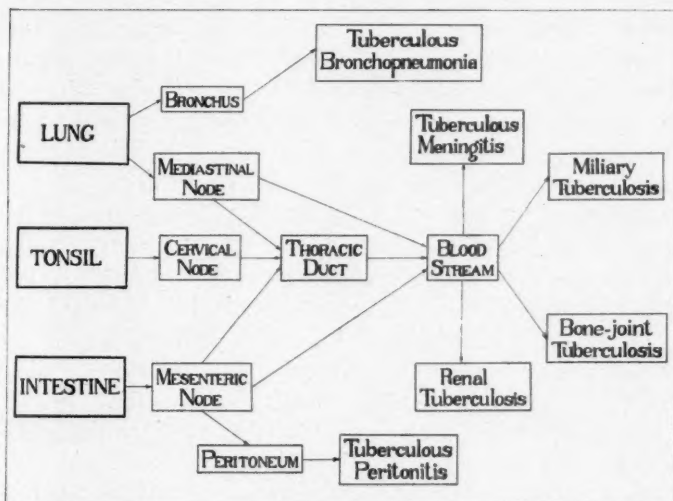


Fig. 1. Diagram showing probable mode of entrance and distribution of the tubercle bacillus in the human body. (After Harris.)

tubercle bacilli, and in no case did infection occur when the rabbit urine was injected into guineapigs. In their study of guineapigs they found that eleven out of twelve used died of generalized tuberculosis and the other died of pneumonia but was also found to have tuberculosis. Upon autopsy 75 per cent of these animals showed tubercles and bacilli in the kidneys, but in only three animals were organisms found upon microscopic examination of the urine. However when the urines were injected into other pigs 50 per cent of them developed tuberculosis. As a result of these studies the authors conclude in part: 1. There is no evidence to support the theory of excretory bacilluria. 2. Renal tuberculosis is common in the infected guineapig. 3. A negative urine does not rule out renal tuberculosis. 4. Hematogenous infection is the rule as shown by mul-

tuple foci. 5. There is marked resemblance between guineapig and human renal tuberculosis. 6. Individual lesions may heal; probably rarely but more commonly than supposed.

On the other hand Hobbs (quoted by Medlar) in reporting 100 cases of tuberculosis none of which had any symptoms of renal involvement, found six to have positive urine upon guineapig inoculation. One of these six later came to autopsy but no renal lesions could be demonstrated. Also Beer, Caulk (quoted by Medlar), and others believe that the organisms may pass through the uninjured kidney.

From a further study of 30 autopsied cases dying as a result of advanced tuberculosis other than renal, Medlar⁶ found that in five of these there was evidence of activity and scarring, the scarred areas and the reaction about them being in the same area distribution and resembling in the reaction itself the active lesions, so that he concluded that renal tuberculosis does heal.

Clinically the patient with renal tuberculosis may present several distinct pictures. As expressed by Beer⁷ there is: 1. The usual and most common type, that of a continued and progressive cystitis resulting in frequency, nocturia, and burning with a gradual diminution in the bladder capacity with or without bleeding and pyuria. 2. Those resembling kidney stones with x-ray evidence of shadows in the kidney areas. 3. Those resembling an essential hematuria or the hematuria of a neoplasm. 4. Persistent pyuria without bladder symptoms. 5. Those who have had bladder symptoms in the past but who upon presenting themselves give the symptoms and findings of stricture of the ureter. 6. Those resembling acute pyelonephritis, and 7. Those resembling perinephric abscess. Unfortunately the types are somewhat mixed so that even though these be kept in mind the picture is often confusing. However the proper diagnosis can be made in the vast majority of cases provided the proper steps are taken. These are cystoscopic examination, specimens from each kidney whenever possible as well as a bladder specimen, centrifuged urine from these sources with careful microscopic examination for the tubercle bacillus, animal inoculation of these urines if the bacteria are not found beyond question, and pyelographic studies. Frequently all the steps are not necessary,—the appearance of the bladder is often in itself diagnostic. When the bacilli can be found microscopically, animal inoculation is necessary only for verification. Frequently too the pyelograms when taken together with the clinical picture are diagnostic.

CASE REPORTS

CASE 1.—Mrs. A. C., 27 years of age, came into the clinic* Feb. 17, 1930. She stated that two years ago she had noticed hematuria with the passage of clots, no frequency, urgency or other urinary disturbance. This continued until she rested in bed for a month and then entirely subsided. About Thanksgiving she had another attack which lasted until January. She then stayed in bed for five weeks and the hematuria subsided. Again no evidence of any infection in the urinary tract was found.

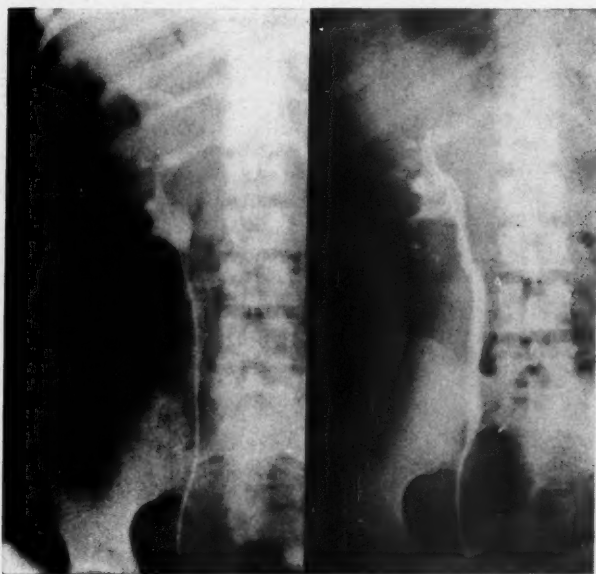


Fig. 2. (Case Dr. C. C. Higgins.) Early tuberculosis in pyelogram to the left. At the right the same pelvis two years later showing progress and extension of the disease. (Case 1.)

When she entered the clinic her laboratory data were essentially negative. Guinea pig inoculation did not reveal any evidence of tuberculosis and the specimens taken from the kidneys showed no pus or organisms; however, in view of the filling defect which was present in the cephalic calyx a diagnosis of tuberculosis was made.

X-ray report as follows: "Both pelves filled. The left kidney pelvis shows a blunting of the cephalic calyx. The pelvis is slightly enlarged. The ureter is somewhat dilated and has a stricture at the third transverse process. The condition seems to be an early tuberculosis of the upper pole with a stricture of the ureter." (fig. 2.)

*Reported through the courtesy of Dr. C. C. Higgins of the Cleveland Clinic.

Since she was not bleeding, she was advised to go to bed and was placed on a tuberculosis regime. She was told to return again after a month for a recheck but she did not return until two years later at which time she again had hematuria. This time the pyelogram of the left kidney showed deformity of the upper calyx, also the caudal calyx. The kidney pelvis was apparently full of blood clots. There was a stricture of the ureter in the upper third. This was again reported by the radiologist as a tuberculous kidney.

Nephrectomy was therefore performed on March 2, 1932, and pathologic examination confirmed the diagnosis of tuberculosis.



Fig. 3. Early lesion of tuberculosis. Only symptom, persistent hematuria. (Case 2.)

CASE 2.—Mrs. L. S., 46 years of age, entered the hospital complaining of hematuria, present intermittently for six months but not accompanied by any other urinary disturbance. Except for an attack of "rheumatism" four years before which had been cured by the removal of septic tonsils, the patient did not remember any severe illnesses. Cystoscopic examination revealed a normal bladder but blood was seen coming from the left ureteral orifice. Bilateral pyelograms (fig. 3) showed that the inferior minor calices on the left were almost completely obliterated, and it was the opinion of the radiologist that the changes could best be explained on the basis of tuberculosis. Consequently left nephrectomy was done without further laboratory work because of continued and severe bleeding. Pathologic diagnosis of the specimen was tuberculosis based upon the finding of the organism in the slides as well as the typical picture of the lesions. Evidence of healing was also manifest.

CASE 3.—Mrs. E. B., aged 24, entered the hospital in June 1932 complaining of frequency, nocturia, and burning for the past six months. With the onset of menstruation during this time she would also have attacks of dull aching pain over the region of the right kidney with marked tenderness in the right lower quadrant accompanied by vomiting. She had lost about 15 pounds, and upon several occasions examination of her urine showed it to contain many white but no red blood cells. Microscopic examination failed to reveal the tubercle bacillus.



Fig. 4. Almost non-functioning kidney with greatly distorted and dilated pelvis.
(Case 3.)

Upon admission cystoscopic examination by Dr. James R. Stites revealed that the bladder capacity was greatly reduced and about the region of the right orifice there was an area of marked inflammatory reaction, rather productive in type, and whose surface was irregularly ulcerated. The left orifice was normal. Injection of indigo carmine showed good function from the left and lack of function from the right. From the appearance of the bladder together with these symptoms, a presumptive diagnosis of tuberculosis was made. An intravenous pyelogram was done (fig. 4) and the report of the radiologist was pyonephrosis of the right kidney. The right kidney was removed and the pathologic report was grossly a pyonephrotic sac, and microscopically tuberculosis of the kidney with complete destruction of normal tissue.

It is of interest in this case to mention that since the operation the patient has gone through a normal pregnancy, being delivered of a healthy child. This fact alone is good evidence that this advanced infection was unilateral, or if

present at one time in the now remaining kidney, has undergone complete healing.

CASE 4.—Mrs. B. F., aged 29, entered the hospital in March, 1935. For the previous six months she had had increasing frequency, nocturia, and burning. During the latter part of this time she had had several attacks of chills followed by fever and she had had to go to bed for several days following these attacks. Two weeks earlier she had noticed a mass in the left side which had gradually increased in size and which had become sore and tender. Weight loss had been about 20 pounds.

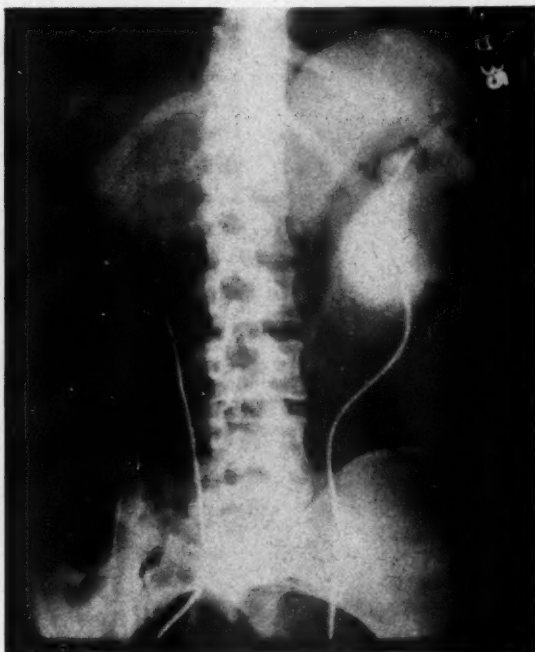


Fig. 5. Greatly distorted and dilated pelvis with pyonephrotic sac extending from level of the diaphragm to pelvic brim. (Case 4.)

Cystoscopic examination showed her bladder to be normal in size but with a generalized marked inflammatory reaction but no ulceration. Catheters could be passed easily on both sides. The right kidney urine was microscopically clear but no urine could be obtained from the left. A phenolsulphonephthalein test showed 12 per cent output in 10 minutes from the right and none from the left.

A pyelogram was made on the left side (fig. 5) and the report was as follows: "Stone deposits with tremendously enlarged kidney and complete destruction of the calices and with the conclusion that the condition was one of calcareous pyonephrosis.

The kidney was subsequently removed and the pathologic report was: The kidney exhibited extensive destruction with numerous caseous areas; microscopically the section showed almost complete destruction of normal tissue with only an occasional group of tubules and glomeruli. Everywhere were scattered tubercles with foreign body giant cells upon which were superimposed infiltrating polymorphonuclear cells. Diagnosis is advanced tuberculosis.

CASE 5.—W. Y., a man of 41, entered the hospital in February, 1934, complaining of hematuria of two months duration. He had had no urinary symptoms until after he contracted gonorrheal urethritis in September, 1933. He



Fig. 6. Bilateral infiltration of dye usually considered consistent with diagnosis of tuberculosis. This patient was also suffering with pulmonary tuberculosis. (Case 5.)

had been treated for this until the discharge stopped. With the more recent onset of hematuria he had undergone treatment for prostatitis and posterior urethritis without satisfactory improvement.

Cystoscopic examination did indeed show a hyperemic posterior urethritis and prostatitis but the bladder showed a few areas of ulceration about the orifices and blood was seen coming from the right side. Catheterized specimens from either side showed many white and red blood cells and microscopic examination revealed numerous tubercle bacilli. Pyelograms (fig. 6) were

reported by the radiologist to be bilateral tuberculosis. This patient was also found to have x-ray evidence of active pulmonary tuberculosis.

CASE 6.—W. G., aged 24, entered the hospital in March, 1934, complaining of chills and fever, marked pyuria and hematuria, and severe pain over both kidney areas. His symptoms had begun three months earlier with acute gonorrheal urethritis. Upon admission he had no urethral discharge but the right knee and right ankle were swollen and tender. His urine contained numerous white and red cells, and there was acute tenderness over both kidneys.



Fig. 7. Bilateral infiltration of dye, but due to gonorrheal pyelonephritis. (Case 6.)

Cystoscopic examination showed a bladder with markedly reduced capacity and with many ulcerations over the floor. His ureters were catheterized with considerable difficulty and each yielded urine containing large numbers of red and white cells. Bilateral pyelograms (fig. 7) were done and the radiologist reported destructive lesions of both kidneys commensurate with a diagnosis of tuberculosis. However, a microscopic examination of the urine from the pelves showed a picture not unlike that seen in acute gonorrheal urethritis, and culture showed the gonococcus. This patient was treated by hyperpyrexia and the injection of foreign protein and when seen three months later had nothing but a mild chronic prostatitis.

DISCUSSION

A closer study of the cases presented shows that in the first two hematuria was the chief and practically only important symptom. In the first case the diagnosis was advanced through x-ray studies alone but without further substantiating facts the proper course, i. e. nephrectomy, was put off for a period of two years; first, because of a justified conservatism on the part of Dr. Higgins and then through the patient's neglect until further and more severe bleeding occurred. In the second case again the single symptom of bleeding and again the x-ray diagnosis alone, but here bleeding was so severe that nephrectomy would have been advisable even without the presumptive diagnosis of tuberculosis.

Cases 3 and 4 present entirely different pictures. Each with a period of illness lasting six months with symptoms pointing first to the bladder and then later presumably involving the kidney in what would appear to have been an ordinary pyogenic infection. In neither case was bleeding stressed, but in both pyuria was quite marked. In case 3 a tentative diagnosis could be made upon the appearance of the bladder but this could not be substantiated through examination of the urine, and the x-ray diagnosis based upon the pyelogram was that of a pyelonephrosis, a stage far beyond that in which a diagnosis of renal tuberculosis can reasonably be made. In case 4 the process had advanced a step farther. The appearance of a mass in the side gradually increasing in size and tenderness would indicate involvement of the surrounding parts. In this case the bladder did not present the usual definite evidence of tuberculosis of the kidney and the x-ray report again was misleading because of the far advanced stage.

The pathologic reports on these four cases show that in one (case 2) there was definite evidence of healing, in two (cases 3 and 4) there was practically complete destruction of all normal tissue, and in the remaining one (case 1) there was complete destruction of normal tissue about the upper pole, but with only an early lesion in the lower calyx.

Since three out of these four are known to be alive and well and one of these has had a normal pregnancy it may be presumed at least that in these instances the infection was unilateral.

The two remaining cases are unusual in that each dated from the onset of acute gonorrhea. In the first of these the usual treatment failed because of a mistaken diagnosis and the usual line of treatment for tuberculosis of the kidney could not be followed because the infection in the kidneys was bilateral and further com-

plicated by pulmonary disease as well. This patient was institutionalized and his progress since then has not been followed. The last case was included because of the close parallel in onset, symptoms, and x-ray findings with the preceding one. The x-ray findings are of particular interest because they illustrate nicely at least one of the difficulties confronting the radiologist in such cases. It may be added also that gonorrheal pyelonephritis is extremely rare. As stated before, proper treatment in this case resulted in an especially good result.

The treatment of tuberculosis of the kidney in the majority of cases is surgical, resulting in nephrectomy of the involved side. This is true because active pulmonary tuberculosis is not often found at the time the renal infection is discovered, and the infection is unilateral in the great majority of cases. Beer⁷ in considering this point states that in only 10 to 20 per cent are both kidneys involved and in collecting urine from the healthy remaining kidney was successful in getting positively infected guinea pigs in only 18 per cent. He further states that from data collected on 669 cases of renal tuberculosis coming to autopsy the disease was shown to be still confined to one kidney in 52 per cent. Surgery is the best treatment also because it results in cure in a high percentage of cases and except for the occurrence of a rare septicemia resulting in a miliary spread of the infection, or in infection and consequent sinus formation at the operative site has few complications and it is a reasonably safe procedure.

Heyburn Building.

REFERENCES

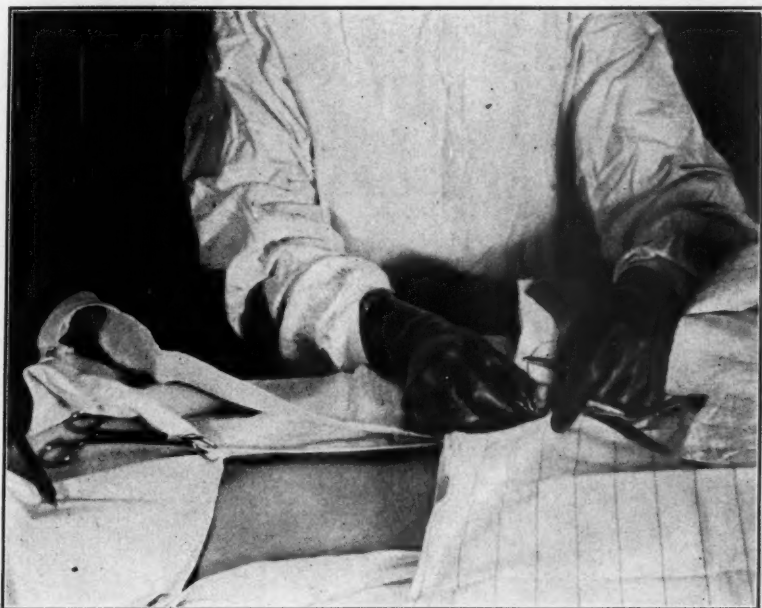
1. Harris, R. I.: Tuberculous Bacilluria: Its Incidence and Significance Amongst Patients Suffering from Surgical Tuberculosis, *Brit. J. Surg.* 16: 464-484 (Jan.) 1929.
2. Addison, O. L.: Tuberculosis of Kidney in Childhood, *Brit. M. J.* 2: 565-567 (Sept. 28) 1935.
3. Band, D.: Renal Tuberculosis; Histopathology and Pathogenesis, *Edinburgh M. J.* 42: 162-174 (March) 1935.
4. Helmholtz, H. F., and Milliken, F.: Kidney: Filter for Bacteria; Presence of Bacteria in Blood, Kidney and Urine after Varying Intervals Following Intravenous Injection, *Am. J. Dis. Child.* 29: 497-505 (April) 1925.
5. Helmholtz, H. F., and Field, R. S.: Kidney: A Filter for Bacteria; Role of Technic on Apparent Excretion of Bacteria by Kidney, *Am. J. Dis. Child.* 29: 641-644 (May) 1925.
6. Medlar, E. M., and Sasano, K. T.: Experimental Renal Tuberculosis, with Special Reference to Excretory Bacilluria, *Am. Rev. Tuberc.* 10: 370-391 (Dec.) 1924.
7. Medlar, E. M.: Renal Infection in Pulmonary Tuberculosis: Evidence of Healed Tuberculous Lesions, *Am. J. Path.* 2: 401-413 (Sept.) 1926.
8. Beer, E.: Diagnosis and Treatment of Chronic Tuberculosis of Kidney, *J. A. M. A.* 92: 1912-1917 (June 8) 1929.

A FEW AIDS IN THE OPERATING ROOM

C. C. HOWARD, M. D.

Glasgow, Ky.

ABDOMINAL SPONGES are absolutely necessary, but their use can be limited if you have good suction. For ten years we have made it a fast rule that when the peritoneum was picked up for opening *the nurse must remove all small sponges from the operating table and keep them away until the peritoneum is securely*

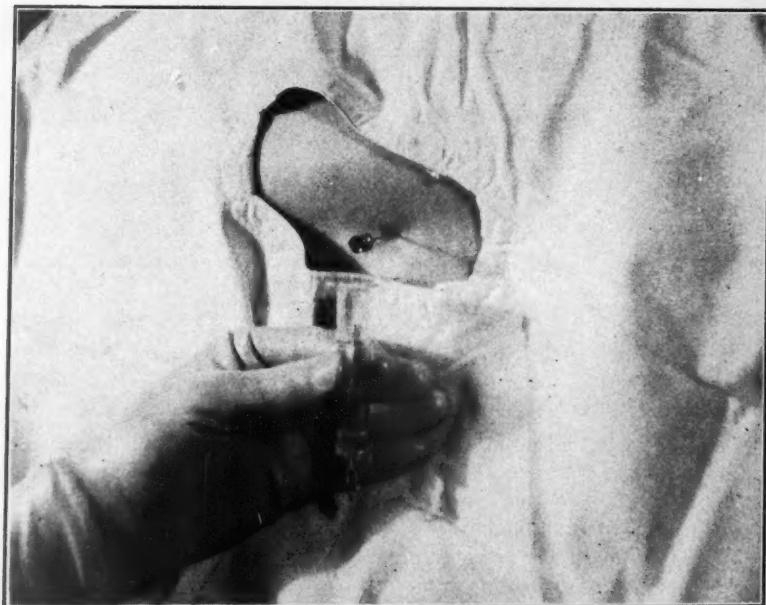


sutured at close of operation. During the operation moist gauze pads are used. Each pad has a safety pin sewed to the tape; the nurse pins each pad to the abdominal sheet. This simple procedure has saved us no end of worry.

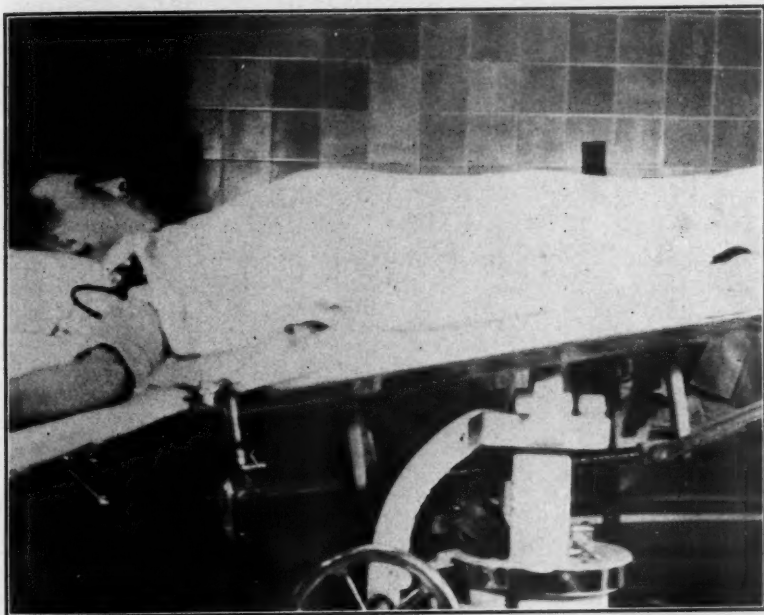
SUTURES AND NEEDLES. Each surgeon must work out the details of his ligatures and needles according to his likes and dislikes. For one year we have used sutures that have the needles attached (special made) for all surgery. *Their use has proved a great value in saving time and improving accuracy.* There is very little increase in the cost of suture material of this type. This is an innovation that should be given a thorough try-out.



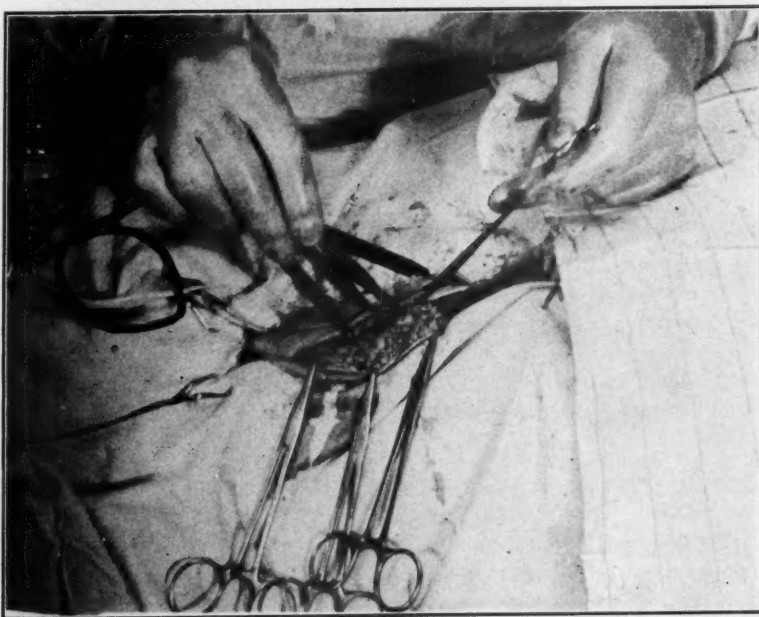
Preparing to do a Suprapubic Cystotomy.



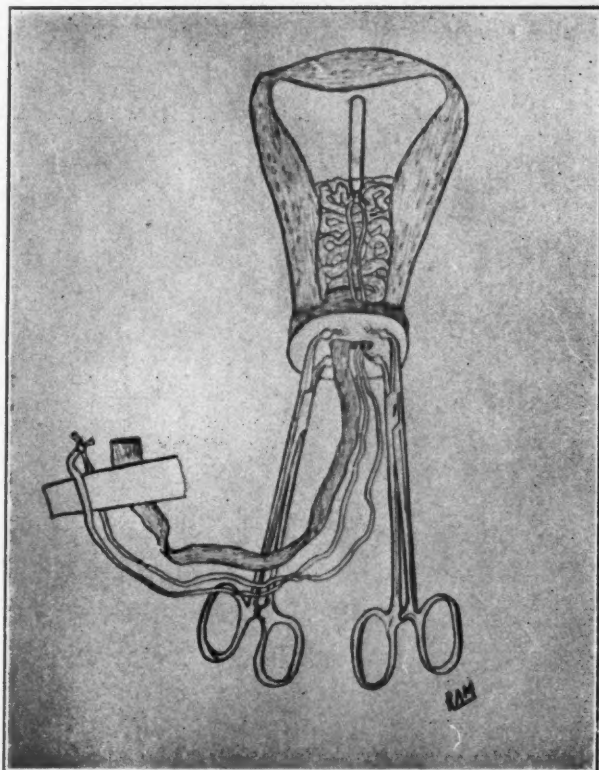
Collecting Spinal Fluid



Trendelenburg Position with head elevated



Hemostasis of the wound by coagulation



Radium Treatment of the Uterus. Towel clips at the cervix prevent expulsion of the radium.

SUPRAPUBIC CYSTOTOMY WHERE YOU WISH TO DRAIN THE BLADDER ONLY. For years I had longed for an extra large trocar (No. 28 or 30) for this work. Accidentally, I came upon the large veterinary trocar and found it to be ideal with a guard added. Insert a large mushroom catheter through the cannula and it makes a water-tight drainage. First make an abdominal incision and free the peritoneum from the dome of the bladder. Make sure the bladder is well distended.

SPINAL ANESTHESIA. After using spinal anesthesia in twenty-five hundred cases I can heartily endorse it. It gives the patient who is desperately ill an added margin of safety. If you use spinal anesthesia master the details yourself. Do not delegate it to the assistant, anesthetist or intern.

This anesthetic is like a high-powered rifle—you must handle it often without timidity in order that you learn the fine adjustment.

Ninety per cent of all our upper abdominal operations are performed under spinal anesthesia without the addition of general or local. We believe the control of its height is due to measuring accurately the amount of spinal fluid withdrawn and replaced, plus the interspace of the puncture, and most of all the Trendelenburg position of the body immediately after injection, but *do not lower the head, keep it up with a pillow. This prevents the anesthesia from reaching the cervical position.*

COAGULATION. This procedure should become routine in the operating room. *It is safe and saves time to coagulate the bleeding in the abdominal wound. Just touch the hemostat and you have a sterile hemostasis. It is excellent to control bleeding from the liver, gallbladder bed or any part of cyst wall that is difficult to remove. Many, many times it will serve you well.*

RETAINING RADIUM IN UTERUS. Make sure the radium stays where you place it. Nature makes an effort to expel any foreign body within the uterine cavity.

After radium is inserted, pack small strip of tape gauze lightly into lower segment of uterine cavity and cervical canal. Attach this strip with the radium umbilical tape to thigh with adhesive. *This will prevent the error of leaving the gauze pack at the time of removal.*

Two towel clips to cervix will prevent the radium from being expelled.

Credit is hereby given to all surgeons who have given serious thought to simplifying operating technic, especially Kelly and Ward, Babcock and Judd.

THE USE OF NICOTINIC ACID IN IDIOPATHIC PRURITIS VULVAE

M. Y. DABNEY, M. D.

Birmingham, Alabama

THE purpose of this talk is to report the use of nicotinic acid in eight cases of pruritus vulvae in white women, two of whom also had pruritus ani.

NICOTINIC ACID

According to Spies¹, nicotinic acid is new as a vitamin and a therapeutic agent, but not as a chemical substance, for it was isolated from tobacco in 1867 by Huber; from rice polishings in 1912 by Suzuki, Shimamura and Otake; from yeast as well as rice polishings by Casimir Funk in 1913; its importance in plant physiology was reported by Dawson in 1938; and it was isolated from liver extract and was found to be specific for canine black tongue (a vitamin B deficiency disease) in 1937 by Elvehjem and his associates of the University of Wisconsin², to mention but a few of the pioneer workers with this interesting vitamin.

Nicotinic acid is pyridinic acid, or a 5-carbon ring with a nitrogen and a carboxyl added. It is interesting to note³ that any toxic reactions from the preparation come from the unconverted acid and not from the amide into which it is converted for use in the body. The stimulant coramine is another amide of nicotinic acid. It also will produce remissions of pellagra without producing a reaction but its cost is greater than that of nicotinic acid.

Use in Pellagra.—Following the report of Elvehjem et al., Spies, Cooper and Blankenhorn⁴, of the University of Cincinnati, first used the drug successfully in pellagra in the same year (1937). Immediately prior to that, pellagra had been treated with high caloric diets including large quantities of yeast, the average treatment of a severe case requiring at least six weeks. Also the same good results had followed the employment of the more expensive injections of liver extract. In both instances it was the vitamin B content of the material that was the potent factor, and more specifically, it was probably the nicotinic acid content of the vitamin B group that did the trick.

Liver extract requires an average of about seven days for a remission of symptoms in an average severe case, whereas nicotinic acid will permit the patient to leave the hospital in three or four days. The patient will show startling improvement as early as

¹Read before the Postgraduate Surgical Assembly, the tenth annual meeting, of The Southeastern Surgical Congress, Atlanta, March 6, 7 and 8, 1939.

twenty-four hours. One in coma will become conscious; and the fiery-red tongue, sore mouth, and the mucous membranes of the intestinal tract and vagina will clear up at an amazing rate.

Use in Pruritus Vulvae—After hearing these reports from Spies in person while he was studying pellagra at the Hillman Hospital in Birmingham in the summer of 1938, and recalling in the past the various pellagrins seen in consultation because of intense vaginitis, I determined to test the effect of nicotinic acid upon other vaginitis cases in which no etiologic cause could be demonstrated, and particularly those of the pruritus vulvae type.

Eight consecutive cases of pruritus vulvae were given nicotinic acid by me. Four of them were entirely controlled as regards the pruritus; and in the other four the drug failed, although two of the latter group were dramatically relieved for a while, only to relapse into their former misery. All were white women seen in private practice.

Two patients had severe enough reactions from the acid, because of the large dosage, to discontinue its use, although one had experienced considerable relief from it for a while. All eight patients had negative Wassermann and Kahn reactions, negative catheterized urines; and they gave no appearance of fungoid dermatoses. Smears for gonorrhea and vaginal drop tests for trichomoniasis and *Monilia albicans* were negative in seven cases. In the eighth, the most severe of all, the last two tests were not done because there was no vaginal discharge.

GROUP 1. SUCCESSFUL CASES

CASE 1.—Miss E. D., aged 34, divorced, a "beautician" by occupation, complained of itching and burning in the vagina and on the vulva, and slightly about the anus, for one and a half years. Examination showed a robust, husky-looking woman, slightly overweight and somewhat of the masculine type of figure.

She had a slight hypertension and the hemoglobin was 85 per cent (Dare). The vulva and vagina objectively showed no change, although the itching and burning had given her untold annoyance. The uterus was retroverted but movable, and there was a good pelvic floor. The leukorrhea was slight and mucoid.

Vinegar douches and floroquin had been tried empirically, and nupercaine ointment as an antipruritic, but with no benefit.

Treatment: On June 7, 1938, nicotinic acid, 100 mg. by mouth after each meal, was given with relief after the first dose. Ten doses were taken. She has had two mild recurrences both of which have subsided nicely on resuming the nicotinic acid for a few days each time. It is now three months since she has had to take any treatment and she is perfectly comfortable.

The result is all the more surprising considering her badly balanced diet which consists mainly of starchy vegetables. Being overweight, she eats spar-

ingly, a typical day's food being: breakfast, one piece of toast and a cup of coffee; lunch, a glass of coca-cola and a beef sandwich; and dinner, potatoes, corn or beans, snap beans, two slices of bread, and a lettuce and tomato salad. She greatly dislikes milk, and has taken none till the past few weeks when she has drunk a little. She eats no butter or cheese, consumes no citrus fruits and eats no eggs. Thus her daily animal protein mainly consists of a drug store beef sandwich, the meat content of which is proverbially as thin as charity.

CASE 2.—Mrs. W., a housewife, aged 35, had had a laparotomy done by me five months previously for papillary cystadenoma of the left ovary. Her diet was excellent. She had had burning and pain in the vagina and on the vulva, particularly on either side of the clitoris, for eight months. Her symptoms had resisted douches and various topical treatments.

Examination showed a woman of normal weight and healthy appearance with a hemoglobin of 80 per cent (Dare). Examination of the vulva, vagina and pelvis was quite negative. There was a very slight white discharge. Introduction of the speculum reproduced her painful symptoms.

From September 20 to October 25, 1938, she was put on nicotinic acid 100 mg. after each meal, with immediate relief and she has had no recurrence of symptoms.

CASE 3.—Mrs. J., a housewife, aged 42, was a highly nervous individual, allergic to many proteins but nevertheless she managed to devise an excellent well-balanced diet. She had been treated by me for stricture of one ureter with benefit. She had a well-marked proven case of hyperinsulinism and even had to get up during the night for nourishment. Her complaint was a scalding, burning, itching pain outside and inside the vagina and around the anus, for one year or more.

Examination showed a tall, malnourished woman with a hemoglobin of 71 per cent (Dare). Examination of the vulva and vagina was negative; and there was only a very slight white discharge. The uterus was retroverted and movable. A pessary had been used without beneficial effect upon a lower backache.

Treatment: From Nov. 9 to 17, 1938, she received nicotinic acid 100 mg. three times a day, with relief of symptoms, and she has needed no further treatment for the pruritus.

CASE 4.—Mrs. D., a housewife, aged 30, was a patient of the lower income group who had formerly been seen for a leukorrhea of undetermined origin, a relapsing secondary anemia, and a slight hypothyroidism. Several times these had responded very well temporarily to a more liberal and better balanced diet, small doses of thyroid extract, and vinegar douches. She was slightly overweight and periodically reduced.

She returned with a history of having neglected her diet. She ate meat only once a week, and no eggs at all but took a quart of buttermilk daily. Her complaint was an old one, a "terrible itching around the vagina" (vulva). There was no burning unless urine touched the vulva. This had existed for at least two years.

She was a woman healthy in appearance but slightly overweight, and with a hemoglobin of 76 per cent (Dare). The labia minora and introitus were

swollen and red without ulceration; and there was much white, cheesy discharge. Examination of the pelvis and rectum was negative.

Treatment: From Feb. 3 to 13, 1939, she took nicotinic acid 100 mg. after each meal, with good results so far, but the treatment has been of rather recent date. Itching, burning, swelling and redness have disappeared.

GROUP I—SUCCESSFUL CASES

	SYMPTOMS & DURATION	PATH. CHANGES	REMARKS
E.D. Age 34 Divor. Beautician	Itching & Burn. vagina & vulva, & slightly about anus for 1-1/2 years.	Neg. vulva, & vag; movable retrov; sl. dischg. Wt. + Hb. 85%	Douches, salve, Floraquin, no benefit. 6/7/38 Rx. Nic. Ac. 100 mg. p.o., t.i.d. Relief. Poor diet.
W.B.M. Age 35 H'w'fe	Burning & pain in vulva & vagina 8 months.	Vulva, vag. & pelvis negative; speculum reprod. pain; sl. discharge. Wt. good. Hb. 80%	Resisted douches & local treat. Rx. Nic. Ac. 9/20 - 10/25/38. Immed. relief. Excellent diet.
J.T.L. Age 42 H'w'fe	Itching, burning, scalding pain, vulva, vagina & about anus, 1 yr. or more	Vulva & vagina neg. Very slight dischg. Movable retrov. Wt. — Hb. 71%	"High strung", aller- gic, B.M.R. minus 13. Hyperinsulinism (eats in night) Rx. Nic. Ac. 11/9- 11/17/38. Relieved. Good diet.
D.L.M. Age 30 H'w'fe	Terrible itching around vagina at least 2 years	Swollen, red lab. minora & introitus. Much cheesy dischg. Wt. + Hb. 76% Urine: porphyrin —.	Vinegar douches no help. B.M.R. minus 13. Rx. Nic. Ac. 2/3- 2/13/39 & later. Relief now. N.B.—Poor diet. 2/17/39 Exam. neg.

GROUP II—UNSUCCESSFUL CASES

These four patients as a whole were even more interesting than the successfully treated group, but time will not permit detailed histories of them. Their ages ranged from 20 to 53 and averaged 38. Symptoms were in the main more intense than in Group I. Two had rectal involvement, one severely; and coitus was impossible in two cases. Duration of symptoms was from seven months to twelve years,—average five years and eleven months.

Pathologic Changes—Two showed no vulval or vaginal changes in the gross; and two were strikingly altered. One of the latter (W.W.) had no discharge but had vulval scars from former alcoholic injections and was excoriated from clawing. Her basal metabolic rate was minus 26 and she was put on thyroid extract. The other severe case (E.T.) had intense redness of the introitus and vagina and profuse white discharge which was negative on extensive study. Leukorrhea was profuse in one (E.T.) and moderate in two (M.R. and J.M.). In the severest case (W.W.) it was absent.

Results.—In the unsuccessful cases, one (M.R.) experienced no relief whatever. The second most severe case of the series (E.T.) showed a return to perfectly normal appearance of an introitus, vagina and cervix that had been intensely red and inflamed; and the discharge became much less profuse. Burning and itching likewise disappeared for about one month, except that on coitus there was always intense burning and pain. Apparently on that account the patient, a young and very passionate woman of 20, considered the treatment a failure, and therefore discontinued nicotinic acid, saying she was "no better".

The fourth and worst (W.W.) was relieved for about five to seven days, during which she also said she had never felt so well since her trouble began. That period of comfort offered the only opportunity for a basal test which she then had done. She was likewise benefited later by thyroid extract given for a B.M.R. of -26 . But she returned to Arkansas and later wrote that the general reaction from nicotinic acid was so great that she could not take it any longer. Despite several letters suggesting much smaller doses, she has not repeated the treatment. All of this group are therefore classed as unsuccessful.

REACTION TO NICOTINIC ACID

All the cases had some reaction to nicotinic acid. Most of them, some fifteen minutes after taking it, felt a flushing of the face, neck and shoulders that was accompanied by a feeling of heat in those regions and a burning that lasted about twenty minutes. It tended to be less after the first dose and to be extremely mild or absent from then on. Others had a wider distribution over the body of the flushing and burning. One complained that even the soles of her feet were involved. It was this patient (W.W.) who was one of the two who discontinued the treatments on account of the severe reaction and could not be coaxed by letter to repeat it with 20 mg.

GROUP II—UNSUCCESSFUL CASES

SYMPTOMS	DURATION	PATH. CHANGES	REMARKS	
E.T. 20, H'w'fe	Very severe itching & burning of vulva & vag; much white disch'g. Coitus im- possible. Claws herself.	7 Mos.	Vulva neg. but introitus, vag. & cervix red & inflamed. No break in m.m. or skin. Very sensitive. Much leukor- rhea.	Second most severe case. Resisted vine- gar douches, Flora- quin & many drugs. Nicotinic acid stopped symptoms about 1 Mo. No more red- ness then. But in- tense pain & burn'g on coitus. Stopped treat. & said "no better." Never in basal condition. Diet fair.
M.R. 39 Single T'chr.	Itching & burning of introitus & vulva; & moderate disch'g.	9 Yrs.	Negative vulva & vag; mod- erate mucoid leukorrhea.	B.M.R. plus 3. Followed Trich. vaginalis which was cured. No relief from nicotinic acid. Fair diet.
J.M. 40 H'w'fe	Moderate disch'g with moderate to severe vulval & anal itching.	12 Yrs.	Negative vulva and vagina. Moderate mucoid leu- korrhea.	Severe menopausal syndrome, helped by Theelin. Stopped nicotinic acid on ac- count general re- action. Good diet.
W.W. 53 H'w'fe	Intense itching, burning, & pain in vulva & about anus. Claws her- self. Coitus im- possible.	26 Mos.	Vagina negative. Excoriations on vulva from claw- ing; scars from alcohol injection sloughing. No discharge. No leukorrhea.	Most severe case of all. B.M.R. minus 26. Thyroid extract helped some. Nico- tinic acid greatly helped 5-7 days. Stopped it account severe general re- action. Good diet.

doses.* She wrote that it (in 100 mg. doses) had made her very nervous and at times caused nausea and vomiting.

Reactions were always milder when the drug was taken after meals.

It now seems apparent that far more of the nicotinic acid was used than was necessary. I propose in future to prescribe 20 mg. three times a day instead of 100 mg.

CONCLUSIONS AND SUMMARY

1. My experience in the administration of nicotinic acid to eight women with pruritus vulvae of unknown etiology has been described. One-half (4) of them were relieved; and two of those also had relief from pruritus ani accompanying the trouble.
2. The four that were unrelieved in the main were somewhat more severe cases and the duration of their symptoms was distinctly longer. The average duration before treatment for the relieved was 14 months, whereas the unrelieved had suffered for an average of almost 6 years.
3. Since nicotinic acid, though synthetically made at the present time, is merely a vitamin and a member of the B group, relief from its administration in pruritus vulvae should be temporary unless repeated. Hence, after the therapeutic test has determined its need, a well-balanced, high caloric diet, especially rich in B, should be insisted upon.
4. Two of the successfully treated patients had subsisted principally upon starchy foods and with very little animal protein. The diets of the unsuccessful group varied from fair to good.
5. No case of pruritus vulvae should receive this treatment until a most careful study has ruled out such etiologic factors as pediculosis pubis, diabetes, the fungoid dermatoses, trichomoniasis, gonorrhea, *Monilia albicans*, and certain allergic states.
6. No claim is made that the cases that responded to nicotinic acid therapy represent subclinical pellagra or that they would ever reach that stage. But it does not seem unreasonable to class them as B-deficiency cases, and to suspect that should the depletion of B progress far enough, true pellagra might result.
7. The dosage of nicotinic acid, 100 mg. three times a day after meals, is thought to have been far too large and to have caused several unpleasant though harmless reactions. In the future, 20 mg. three times a day will be employed and only increased where deemed necessary.

8. I was unable to determine ahead of time which cases of pruritus vulvae of undetermined etiology would or would not respond to nicotinic acid therapy.

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REFERENCES

1. Spies, T. D.: Read at International Congress on Tropical Medicine and Malaria. Amsterdam, Sept. 21, 1938. To be published.
2. Elvehjem, C. A.; Madden, R. J.; Strong, F. M., and Wooley, D. W.: Relation of Nicotinic Acid and Nicotinic Acid Amide to Canine Blacktongue, *J. Am. Chem. Soc.* 59: 1767, 1937.
3. Spies, T. D.; Bean, W. B., and Stone, R. E.: The Treatment of Subclinical and Classic Pellagra. Use of Nicotinic Acid, Nicotinic Acid Amide and Sodium Nicotinate, *J. A. M. A.* 111: 584-590 (Aug. 13) 1938.
4. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra. *J. A. M. A.* 110: 622-627 (Feb. 26) 1938.

MESENTERIC CYSTS

J. W. SNYDER, M. D.

Miami

MESENTERIC cysts are among the rarest of abdominal tumors. Most authors estimate the total number of recorded cases at from two to three hundred in all medical literature, although Warfield places the estimate at nearer five hundred. Collins and Berdez report not a single case in fifteen thousand autopsies at the University of Minnesota, and in two hundred thousand cases at St. Mary's and St. Luke's Hospitals in Duluth only two mesenteric cysts were found. Alesen was unable to find a single case in the records of the Los Angeles General Hospital during the years of 1912 to 1929. Judd states that in 820,000 admissions to the Mayo Clinic twenty-five cases of mesenteric tumors were found and only eight of these were cysts. The Massachusetts General Hospital reports six cases between the years of 1900 and 1926. At any rate the occurrence is exceptional and men of wide experience may pass their entire surgical careers without encountering such a tumor.

The statement is also frequently made that a mesenteric cyst has never been diagnosed preoperatively. Certainly for many years this statement was true and the total number of correct diagnoses to the present is surprisingly small. Peterson records one correct diagnosis in reporting his five cases. Parsons in 1936 after a careful review of the literature was able to find four cases correctly diagnosed and proven by operation. Three clinical diagnoses were made by the process of exclusion and one from roentgenologic studies alone.

In 1507 the first case of mesenteric cyst was reported by Benevieni as an anatomic curiosity. Rokitsky made the first formal description of the condition in 1842 as found at autopsy. Subsequently Tulpio and Morgagni described similar post-mortem findings. From that time until 1880 an occasional case was operated with uniformly fatal results. Since 1880 surgical measures have met with increasing success and the pathology has been much clarified.

We now recognize that mesenteric cysts are classified as such largely by reason of their location between the two layers of the mesentery and that their origin, although still far from clear, is probably quite diverse. Cysts may vary in size from a centimeter in diameter to huge masses filling the entire abdomen. Thus, as noted by Roller, they may be either too large or too small to diagnose readily. The mesentery of the small intestine is the usual location

of the cyst. Warfield's 129 cases were situated as follows: ileum 38, jejunum 14, cecum and ascending colon 14, transverse colon 13, sigmoid 12, descending colon 5, duodenojejunal juncture 2, appendix 2, duodenum 1, gastrohepatic omentum 1, colon (portion unknown) 6, small bowel (portion unknown) 6, unknown 15.

The cyst may be and commonly is unilocular. However, irregularly shaped and multilocular cysts are not uncommon. The contents may be clear serous fluid, milky chyle, hemorrhagic fluid, or blood clots and in dermoids sebaceous material with hair, etc.

ETIOLOGY

As previously stated mesenteric cysts are classified as such largely because of their location. Their origin and etiology is still uncertain. Much speculation and conjecture have been indulged in by various authors as to the genesis of mesenteric cysts. The older writers, including Rokitsansky and Virchow, thought their origin was from degenerated lymph glands. Lymph stasis, cystic degeneration of a lipoma or tuberculosis glands, hematomas, etc., were all discussed as probable sources of cystic tumors. In 1900 appeared Dowd's widely quoted paper in which he divided mesenteric cysts into various classifications relative to their presumed etiology.

A. Embryonic

1. Dermoids
2. Serous
3. Chylous
4. Hemorrhagic
5. Cysts with walls like intestines

B. Hydatid

C. Malignant

This work stimulated interest in the subject and aroused a new line of thought as to etiology. Dowd pointed out the close anatomic relationship in embryonic life between the root of the mesentery and the Wolffian body. He postulated that sequestered cells from the Wolffian body might be displaced forward into the mesentery and might later develop into a tumor. He also suggested that small portions of the developing gut might likewise be displaced into the mesentery and later form an enterocyst. Dowd's emphasis on the embryonic origin of mesenteric cysts was a decided advance in our conception of the process. Since his time the general theme has been largely the same with minor changes and amplifications. From the embryologic standpoint it is quite conceivable that remnants of the Wolffian or Mullerian ducts or bits of the genital gland may be

displaced within the mesentery and act as nuclei for the development of mesenteric tumors later in life. Retroperitoneal tumors may be of similar origin but as they do not lie in the mesentery are not classified as mesenteric cysts.

Normally, sequestration of certain groups of cells with subsequent development in later years after a period of quiescence is well illustrated by the development of the second dentition. Here all essentials are present for tooth formation but for some reason such development is held in abeyance. The development of the female breast at puberty may be cited as a similar illustration.

The embryologic origin of enterocystomas is rather definite. Miller records such a cyst in a four day infant. The wall of the cyst was similar to the adjacent gut and the cyst was in part directly continuous with the jejunum. Palmer reports an enterogenous cyst in an infant eight days old. These instances certainly support the sequestration theory as to the origin of the enterogenous cysts. In other varieties such as the chylous cysts and some serous cysts the evidence is not so definite. Hertzler states that while this theory may account for some cysts it cannot account for their occurrence in all localities. Trauma or inflammatory changes are advanced as causative factors by some observers. Ewing states that a chylous angioma is due to either congenital or acquired obstruction to the lacteals. Arzela contends that an embryologic defect in the formation of the lymph nodes may produce a cyst in later life. Dowd and Westman felt that lymph blockage could not be a factor in their formation because of rich free anastomosis between vessels of the lymphatic bed. Dowd believes that the chylous nature of the cyst was due to effusion of chyle into a cyst already formed rather than a blockage of drainage. In short, final solution of the etiology in many instances is a problem for future investigation.

A rough working classification of the various types of cysts encountered is suggested in the following:

1. Simple cysts
Containing clear serous fluid with or without lining membrane.
2. Chylous cysts
Similar to, the above but containing chyle.
3. Cystic dermoids and teratomas
4. Enterocystomas
Containing muscular tissue and mucosa similar to the intestine.
5. Parasitic cysts
Hydatid or echinococcus

6. Traumatic or infectious

The result of tissue destruction by abscess or hemorrhage with final cystic formation.

Hemorrhagic cysts may possibly be of traumatic origin as noted above or more probably simply represent hemorrhage into cysts already formed.

SYMPTOMS AND DIAGNOSIS

There are no definite symptoms or findings which are pathognomonic of the condition. The cyst is usually symptomless in its development until a palpable tumor is noted or until intestinal obstruction or some other abdominal accident occurs. However, a



Fig. 1. The appearance of the abdomen preoperatively.

cystic, mobile nonsensitive mass should suggest the possibility. Most observers note a lateral mobility, if not in other directions. Gastrointestinal x-ray studies should be valuable in ruling out connection with the lumen of the bowel. Pressure symptoms on various organs, particularly the bladder, may be evident. A history of repeated attacks of partial intestinal obstruction is one of the most frequent prominent symptoms and an acute obstruction frequently brings the individual to surgery. The accidents which may occur are intestinal obstruction with or without gangrene of the bowel, volvulus, intussusception, hemorrhage into a cyst or rupture of a cyst with ensuing ileus or peritonitis if infected and torsion of the cyst. Any one of the above accidents will of course necessitate early sur-

gical intervention and with a palpable tumor mesenteric cyst should be considered among the possibilities.

TREATMENT

Enucleation is the ideal procedure wherever it can be carried out without serious impairment of the vascular supply to the bowel. This procedure is probably applicable in one-third of all cases. Resection must be employed in instances where the cyst cannot be removed with maintenance of bowel integrity. This is often necessary in the presence of an acute intestinal obstruction with the high mortality attendant on a resection of the bowel and anastomosis

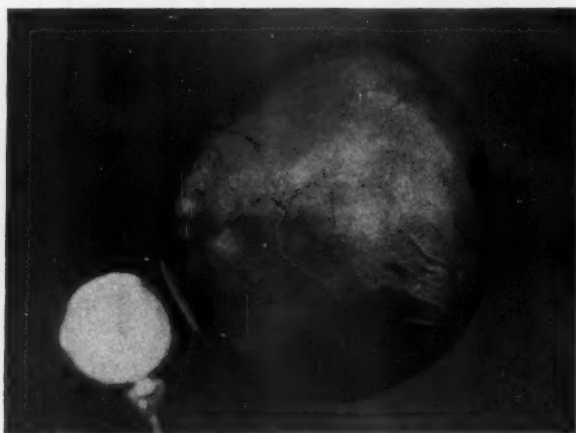


Fig. 2. The cyst after removal.

in the presence of an acute obstruction. Drainage of the cyst may be imperative by reason of dense adhesions or other complications which make removal of the tumor too dangerous a procedure. Dermoid cysts should of course not be drained. The final results reported are far better than would be expected in such a partial procedure. Marsupialization is considered largely obsolete, except in the very unusual case where nothing else can be done. In such cases, opening the cyst and bringing its margin to the surface for drainage does not always cure the cyst and drainage persists for some weeks or months as a rule.

In reporting my single case, it is quite evident that nothing essentially new will be added to the literature on the subject, but as the case is regarded in retrospect it seems incredible that the diag-

nosis was missed. All essential data clearly pointed to the correct diagnosis, but by reason of infrequency of occurrence as well as the rarity of articles on the subject in current medical literature, I failed to consider the possibility. In our local hospital (Jackson Memorial Hospital) between the years 1928 and 1937 there were 78,529 admissions and this is the only case reported during that period. It is with the thought of emphasizing the matter and possibly improving our diagnostic batting average that this case is presented.



Fig. 3. Cyst wall showing hypertrophied endothelium and round celled infiltration.

REPORT OF CASE

Mr. R was 32 years of age. His wife and one child were living and well. His father died of pulmonary tuberculosis at 40. His mother and two sisters were living and well, two had died in infancy. He had had no serious illness and no operations. Seven months before admission he had had a urethral discharge but no gonococcus was found. It was treated and the discharge disappeared in ten days. Six weeks before admission he had had chills and fever for three days and had felt badly for seven days. Influenza had been diagnosed. During this sickness the right testicle developed pain and swelling. On admission the swelling and tenderness had decreased. There was no bladder irritation. For the previous year he had noticed a mass in the lower abdomen, which he considered a distended bladder. For two weeks the enlargement had been more marked and he had had some aching in the back. No other pain or colic had been noted.

Examination: Mr. R was a slender, stooped youth rather nervous and tense, 5 feet 10 inches tall and weighing 130 pounds. The abdomen showed a midline soft but rather tense tumor, the size of a large grapefruit, extending half way to the umbilicus, suggesting in appearance a distended bladder. The tumor was movable laterally but not vertically. The mass lay beneath the recti muscles and seemed fixed in the region of the symphysis. There had

never been any umbilical discharge. A cystoscopic examination was reported as follows:

It was found on examination that the mass which was so visible in the lower abdomen and so easily palpated was making definite pressure on the dome of the bladder, thereby producing an invagination of the upper half of the bladder downward to the sphincteric area. This mass, however, was determined to be outside of the bladder inasmuch as upward traction by one of us permitted the observer to see through the cystoscope that the entire bladder was normal. As soon as the traction on this mass was released it would again descend into the lower abdomen and produce the peculiar appearance of encroachment on the bladder. There was no residual urine found.

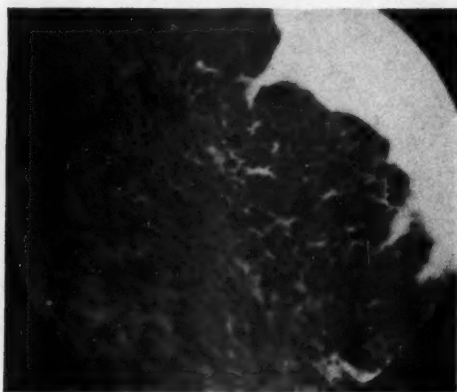


Fig. 4. Cyst wall showing hypertrophied endothelium.

Examinations of blood and urine were essentially negative.

The patient was operated on with the presumptive diagnosis of cyst of the urachus. A low midline incision was made. The peritoneal cavity was approached carefully and the tumor was found to be intraperitoneal. The peritoneum was then opened, the tumor explored and found to be a cyst with a pedicle reaching into the upper abdomen. The cyst was delivered and the first portion of the jejunum was found adherent to the cyst wall. This was separated from the cyst wall and gently pressed downward. The pedicle itself was clamped in sections and the cyst removed. The pedicle was then tied with several ligatures. The raw surface on the jejunum was approximated with running catgut and the raw surfaces on the posterior wall of the abdomen were likewise covered. The abdomen was freed of all blood. The appendix was explored and found to be obliterated. The gallbladder was thin walled and contained no stones. The wound was then closed in the usual manner with imbrication of the anterior rectus fascia and two layers of suture.

The microscopic examination of the cyst wall showed dense fibrous tissue which was partially hyalinized, and in some areas contained calcium granules. A portion of one margin of the tissue appeared to represent a hypertrophied endothelial surface, and contained an infiltration of round cells. Impression: Hyalinized cyst wall.

In conclusion, a case of mesenteric cyst has been presented which was classic in all particulars and which I now feel should have been diagnosed correctly. The condition is rare and the literature on the subject scant.

BIBLIOGRAPHY

1. Alesen, L. A.: Mesenteric Chylous Cysts, *California & West. Med.* 30: 261-262, 1929.
2. Arzela, I.: Contributo anatomico-patologico e clinico allo studio delle cisti linfatiche del grande epiploon, *Policlinico (Roma) sez. chir.*, 29: 417, 1922.
3. Bartlett, E. I.: Mesenteric Cysts, *Surg. Clin. N. America*, 3: 811-821, 1923.
4. Benedict, A. L.: Bibliography of Chylous Cysts of the Mesentery, *Surg., Gynec. & Obst.* 16: 606-610, 1913.
5. Benevise: 1507. Quoted by Deaver.
6. Carlson, H. E.: Mesenteric Cyst Obstructing Bowel, *Ann. Surg.* 97: 639-640, 1933.
7. Carter, R. M.: Cysts of the Mesentery, *Surg., Gynec. & Obst.* 33: 544-547, 1921.
8. Clark, E. D.: Report of a Case of Mesenteric Cyst, *Am. J. Obst. & Gynec.* 11: 238-243 (Discussion: 267) 1926.
9. Collins, A. N., and Berdez, G. L.: Chyle Cysts, *Arch. Surg.* 28: 335-344, 1934.
10. Deaver, H. C.: Congenital Mesenteric Cysts, *Ann. Surg.* 49: 618-627, 1909.
11. Dowd, C. N.: Mesenteric Cysts, *Ann. Surg.* 32: 515-542, 1900.
12. Dowd, C. N.: Cysts of the Mesenterium, *Ann. Surg.* 73: 784, 1921.
13. Dutton, F. K.: Ruptured Chylous Cyst; case, *New England J. Med.* 203: 1032-1034, 1930.
14. Eliason, E. L., and North, J. P.: Perforated Chylous Cyst, *Ann. Surg.* 101: 1452-1455, 1935.
15. Ewing, James: Neoplastic Diseases, ed. 3. Philadelphia: W. B. Saunders, 1928.
16. Flynn, C. W.: Mesenteric Cyst with Report of Case of Cystic Lymphangioma, *Ann. Surg.* 91: 505-513, 1930.
17. Gale, J. W., and Keelev, J. L.: Mesenteric Cysts Causing Intestinal Obstruction, *Am. J. Surg.* 40: 647-653, 1938.
18. Green, J. A.: Entero-mesenteric Cysts, *Surg., Gynec. & Obst.* 44: 401-404, 1927.
19. Gross, A. G.: Pulmonary Emboli of Lymphatic Origin, Following Operation for Chylous Cyst, *Lancet* 2: 1409, 1935.
20. Hertzler, A. E.: The Peritoneum. v. 2, p. 764. St. Louis: C. V. Mosby, 1919.
21. Jewesbury, R. C.: Lymphatic Cyst of Mesentery and Volvulus in Child, *Lancet* 1: 1170-1171, 1937.
22. Judd, E. S., and Crisp, N. W.: Primary Tumors of the Mesentery, *Proc. Staff Meet. Mayo Clinic*, 7: 555, 1932.
23. Judd, E. S., and Heimdal, O. C.: Mesenteric Cysts, *Surg. Clin. N. America* 12: 849-855, 1932.
24. Livingston, G. L.: Mesenteric Cyst; Case. *South. M. J.* 28: 1028-1029, 1935.
25. Miller, R. T.: Enterogenous Mesenteric Cysts, *Johns Hopkins Hospital Bulletin*, 24: 316, 1913.
26. Morgagni: Quoted by Swartley.
27. Moynihan, B. G. A.: Mesenteric Cysts, *Ann. Surg.* 26: 1-30, 1897.
28. Muir, J. B. G.: Mesenteric Cyst Causing Attacks of Sub-acute Obstruction in Child, *Lancet* 1: 742-744, 1935.
29. Nordland, M., and Larson, L. M.: Mesenteric Cysts, *Ann. Surg.* 101: 1289-1291, 1935.
30. Palmer, D. W.: Mesenteric Cyst with Prenatal Volvulus, *J. Med. (Cincinnati)* 8: 239, 1927.
31. Parsons, E. O.: True Proliferating Cystic Lymphangioma, *Ann. Surg.* 103: 595-604, 1936.

32. Penberthy, G. C., and Brownson, K. M.: Dermoid Cysts of the Mesentery, *Ann. Surg.* 107: 566-571, 1938.
33. Peterson, E. W.: Cysts, *Ann. Surg.* 96: 340-349, 1932.
34. Peterson, E. W.: Multiple Cysts of the Mesentery, *Am. J. Surg.* 5: 514-516, 1928.
35. Phelan, G. W.: Cysts, *Am. J. Surg.* 22: 321-324, 1933.
36. Rankin, F. W., and Major, S. S.: Tumors of the Mesentery, *Surg., Gynec. & Obst.* 54: 809-817, 1932.
37. Rokitsansky, C.: *Pathologische Anatomie.* 1842.
38. Roller, C. S.: Brief Discussion and Report of 3 Cases, *Surg., Gynec. & Obst.* 60: 1128-1136, 1935.
39. Sala, A. M., and Nachamie, I.: Mesenteric Cyst Causing Prenatal Volvulus of Small and Large Intestine, *Arch. Path.* 8: 180-186, 1929.
40. Shallow, T. A.: Entero-mesenteric Cysts, *Ann. Surg.* 81: 795-800, 1925.
41. Shorvon, H. J., and Wells, L.: Entero-mesenteric Cyst Simulating Acute Retention of Urine; Case. *Lancet* 1: 181-183, 1932.
42. Swartley, W. B.: Mesenteric Cysts, *Ann. Surg.* 85: 886-896, 1927.
43. Tulpio. Quoted by Swartley.
44. Virchow, H. Berlin. *klin Wchnschr.* 1887.
45. Warfield, J. O., Jr.: Study, with Report of 2 Recent Cases, *Ann. Surg.* 96: 329-339, 1932.
46. Wilensky, A. O., and Hahn, L. J.: Mesenteric Lymphadenitis, *Ann. Surg.* 83: 812-826, 1926.

CARCINOMA OF THE BREAST

HUGH H. TROUT, M. D.

Roanoke

IT IS always fascinating to speculate concerning the unknown, and for this reason it is interesting and perhaps profitable to consider some of the possible etiologic factors of carcinoma of the breast.

Naturally, when one mentions heredity in its association with cancer, one instinctively thinks of Dr. Maude Slye and other biologists who have produced "cancer families" in mice—some of which develop malignancy with very slight provocation and others exhibit marked resistance toward many of the usually accepted carcinogenic substances. By the proper mating of representatives of these families of mice, cancer can be produced or prevented almost as desired.

Of course, nothing can be done about hereditary control in the human race until we understand more clearly and can control more effectively the so-called "selective affinity" of mating couples in one species. However, Dr. Clara J. Lynch has contributed a most suggestive study to this question of heredity in the human race. The following statement is quoted from her article:

Of special interest for this discussion is the testimony from duplicate twins. If two individuals are derived from the splitting of one fertilized egg and therefore composed of the same germ plasm, they should not only resemble each other to a marked degree in physical appearance, but should also exhibit the same susceptibility to disease, if it is true that susceptibility is an inherited character. In recent reviews of the literature 38 cases have been discussed. In 12 cases only 1 member of the pair had a tumor. But as the unaffected individual, in all but one instance, was still living when last investigated, the final report for this group cannot be given. Since some variation is to be expected the occurrence of a limited number of exceptions will not detract from the extraordinary picture afforded by the 26 remaining pairs. All had tumors; the growths of each couple were in general of the same type, in the same organ and appeared at approximately the same time. The fact that when both twins do have tumors they present such conspicuous similarities is of a great importance. The parallel in their case histories speaks strongly in favor of genetic control.

In pelvic conditions associated with painful breasts during the menstrual periods, sometimes a simple dilatation of the cervix, but frequently more extensive pelvic surgery, is indicated, and such

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will relieve both the pelvic condition and breast pain. It is suggestive to note that over 60 per cent of our cases of carcinoma of the breast gave a history of association of pain in the breast just previous to the menstrual period, whereas in a similar series, without carcinoma of the breast, only about 20 per cent had painful breasts associated with menses.

Often theelin, prolactin or some similar injection started three to four days before menstruation will prevent painful breasts during that period. A few cases require the addition of antuitrin-S, some are benefited by thyroid extract, and an occasional patient requires epinephrine.

This whole picture of the association of hormones and carcinogenesis is so highly speculative that no definite conclusions can be reached. However, I am sure an accurately taken history carefully analyzed will often indicate which one or combinations of hormones or drugs should be employed in each individual case. I feel it more than probable that by giving these patients relief of painful breasts during their active menstrual life the incidence of cancer of the breast when they reach the menopause may be decreased.

I do not believe all painful breasts are due to cystic mastitis. In some there is such an association. This naturally raises the question of the possible association of chronic cystic mastitis with carcinoma of the breast. This relationship will remain the subject of useless discussion until there is some definite unanimity of opinion as to what constitutes chronic cystic mastitis. At the present time, there is one group of pathologists who believe an autopsy on every woman past 40 years of age will show chronic cystic mastitis, while another group apparently feels this condition is limited to a rather small percentage of cases. Personally, I do not think there is any proven association between this condition and malignancy. However, I feel it is reasonable to presume that, if such an association is demonstrated in the future, it will be found in those cases now classified as "mastopathy"—a name indicating a desquamative epithelial hyperplasia—and not in those designated as "mazoplasia", which term simply denotes a physiologic aberration of the breast which usually develops normally at the menopause.

We all recall Bloodgood's pathologic conference in 1921, when fifty experienced pathologists were not able to agree, except in a very few instances, regarding the significance of the microscopic picture in ten lesions of the breast that were known to be clinically benign.

The histories of my cases do not reveal any definite association between chronic cystic mastitis and carcinoma. I have had no case,

which was proved by histologic study to be definitely chronic cystic mastitis, later develop carcinoma after the removal of a wide section of the involved portion of the breast. However, if there is any question concerning the accuracy of the microscopic diagnosis at least the whole breast should be removed.

The association of the lactation or the absence of lactation as an etiologic factor in carcinoma of the breast is difficult properly to evaluate. For example, in many reported series of cases of carcinoma of the breast, carcinoma has been found to be more frequent in single women whose breasts have never functioned than in married women who have nursed their babies for a sufficient length of time. Frankly, I do not know what constitutes a sufficient length of time, but, from study of the lower animals I believe the longer the babies are nursed the less chance there is that the retained products of lactation will stimulate carcinogenesis. For example, cancer of the udder or bag of a milk cow is practically unknown. Cows are not free from malignancies in other parts of the body. Of course, in dairy cows every possible effort is made to increase the lactation and continue it as long as possible.

Drabble made an extensive study of the udders of all cows slaughtered in the state abattoir at Homebush Bay, New South Wales, Australia, from 1926 to 1929. He does not state how many animals were killed during that period, but, he was able to find only 3 cases of malignancy of the udder and all three of these were epitheliomas not involving the milk ducts. Feldman, in his book, *Neoplasms of Domesticated Animals*, states he has never seen a case of carcinoma of the udder of a milk cow. Joest, in a very extensive experience, failed to see a case of mammary carcinoma in a milk cow.

On the other hand, carcinoma in the mammary glands of dogs is relatively common: puppies are usually removed from their mother's breasts fairly early and before the mother has finished lactation, which is exactly the opposite of what happens to the cow.

Bagg was able to produce 87 per cent of mammary carcinoma in mice by producing stagnation by non-traumatic means, e. g. removing the young from their mothers soon after birth and long before the end of a normal nursing period. The incidence of mammary carcinoma in a control group was less than 5 per cent.

As the most frequent site for carcinoma of the breast is in the upper outer quadrant, it might be possible, especially in the cases with large heavy dependent breasts, that the repeated trauma at that point of support plays a role in the causation of the malignancy at that location. Certainly the acceptance of this suggestion could

be correlated with the lymphatic blockage theory of Sampson Handley.

Of more practical importance, however, is the fact that a properly fitting brassiere that really supports such breasts, often gives relief from the pain. Such a brassiere should be worn whether it has any association with the possible future formation of cancer or not.

To discuss the question of the diagnosis of carcinoma of the breast would require far more time than is allocated to this subject. However, there are a few viewpoints which I think should be mentioned briefly.

The *first* is that we should disseminate the information that most "lumps in the breast" are not malignant. If this is done, I believe we will all see more early cases of carcinoma of the breast, for I am convinced that "cancer-phobia" prevents many patients from presenting themselves until the diagnosis is evident and the prognosis hopeless. For example, in my series of cases of carcinoma of the breast, the patients having the longest period between the time when the lump was first noticed and the time they presented themselves for examination, were mostly doctors' wives.

Second: In my hands the so-called punch biopsy has not been satisfactory, but perhaps I have not had sufficient practice with the method to justify a dogmatic opinion. However, I have seen cases where punch biopsy have given a false sense of security, because evidently the malignancy was missed by the exploring needle. In addition to this unhappy experience I have had one case in which the malignancy was not only missed by the "punch", but the carcinoma was transplanted in the needle tract. Having had these experiences with the method, I feel quite certain I personally am not apt to acquire sufficient practice, unless some more conclusive evidence of its value is put forward than has been presented up to this time.

An argument for the more frequent employment of aspiration biopsy has been that patients can have the specimens obtained by this method in an office and then return to their homes, often at some distance, to wait for a decision, and if indicated, make plans for an operation. In my opinion, this is another argument against the use of the method and not in favor of it, for surgeons all know of the dangers of spreading malignancy of the breast even by palpation of the growth, as well as the danger of liberating cancer cells through any opening made through the defending tissue surrounding the carcinoma.

Third: The injection of opaque substances into the ducts of the mammary gland as a help in the x-ray diagnosis does not, in my

opinion, give sufficient aid to justify what might be a dangerous procedure, and often is a painful experience.

Fourth: If there is any question in the surgeon's mind about the true nature of any tumor in the breast, the growth should be removed, and an immediate diagnosis made from a frozen section. If found malignant, proper treatment should be instituted before the patient leaves the operating table. This can be done in the vast majority of cases, for while irradiation has been found to be an aid, the basis of "proper treatment" still is to be found in the radical removal of all tissue from the chest wall that might be or might become involved in the malignancy. Such removal should be as thorough as is compatible with the safety and comfort of the patient. One danger of associated irradiation with radical surgery, that is not frequently mentioned, but is very real, is that unless the surgeon is careful he will find himself failing to perform as thorough an operation as he is capable of doing, because of the perhaps unconscious hope or belief that irradiation will compensate for his dereliction.

The question of whether to give preoperative or postoperative irradiation or implantation of radium during the operation is one that should be decided in each individual case, and certainly not by any fixed rule. Properly to evaluate each case a full and frank consultation should be held with the radiologist and the pathologist by the surgeon. Certainly during the past few years the contributions of Coutard and other radiologists, as well as the observations of pathologists and surgeons, have demonstrated the necessity for a comprehensive understanding of the life cycle of the invading cancer cells in association with body tissue resistance. Personally, I feel this type of consultation in each individual case is apt to be lacking in large hospitals unless those three departments are more closely united than is sometimes found in such organizations.

The type and extent of the irradiation, whether the Coutard, Pfahler or any other method, must be decided by the radiologist, just as decision as to the type and extent of operation must be the duty of the surgeon. Much harm can be done by unreasonable and dangerous irradiation as well as by ill-advised and improperly executed surgery. Certainly the spirit of competition as to the relative effectiveness of different types of treatment is fast being replaced by a healthy attitude of cooperation.

It has been my experience that when the patient can be told fairly definitely the total cost of the combination of all treatments there has been produced better cooperation from the patient as well as between the doctors.

In a general way, I feel in a young woman with an actively growing cancer, preoperative irradiation is definitely indicated in the majority of cases. In the rest of the cases such irradiation should be considered by the group.

With the exception of a few slight burns I have never seen any harmful effects of placing radium under the skin flaps at the time of operation. The present employment of from 30 to 50 capsules each containing 2 or 3 mg. of radium, placed in different areas of the field of operation and gradually withdrawn, I feel confident will eliminate even such slight burns as we have occasionally had in the past.

As a rule, the majority of my cases have postoperative irradiation. Since 1931 I have been irradiating the ovaries in a few cases. Of course it is true that if the patient is below the menopause age such irradiation will produce all the distressing symptoms of an artificial menopause. However, this is a minor consideration in comparison with the recurrence of the cancer. If the surgeon, pathologist and radiologist consider that in any individual case such a procedure might be helpful, it should be done.

In addition to the possible prevention of extension of the carcinoma, sterilization by ovarian irradiation of a young woman who has had an operative removal of a breast cancer will at least prevent future lactation in the remaining breast. Most surgeons feel the remaining breast should not be allowed to lactate after the removal of the one breast for carcinoma.

Ahlbom, of Stockholm, since 1930 has been irradiating the ovaries in all cases regardless of the patient's age in relation to menopause. He feels his results justify the continuation of this practice.

The irradiation of the ovaries after the menopause does not produce the symptoms of an artificial menopause and it may prevent the liberation of a carcinogenic hormone; if it can be given by a competent radiologist, it should be done.

Certainly there is sufficient evidence from experimental biologic research to justify the irradiation of the ovaries in cases of malignant tumor of the breast. However, the true value in a human experience is most difficult and uncertain estimation, in spite of and because of such clinical evidence as the disappearance of what was apparently lung metastases after pelvic irradiation. I certainly have had no case in which I could state definitely that this practice had been of any curative benefit, and whether it has been of prophylactic value is necessarily only conjectural. However, I expect to continue this method until we see some evidence of harm for the-

oretically it should be of value as a preventive agent of recurrences and metastases.

Finally, I feel the best chance the patient with a carcinoma of the breast has of obtaining satisfactory results is still to be found in carefully executed radical surgery, and further that our results have been definitely improved since combining irradiation with surgery. However, I do not feel either has any replacement value for the other.

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PROGRESS OF SURGERY IN THE SOUTHEAST

SOMEONE has said that every good thing has its beginning in a dream. Ten years ago a member of this organization dreamed of a surgical congress in the Southeast with annual assemblies to develop the art of surgery in the South, and a journal in which to publish the writings of its members. This meeting, our tenth anniversary, with a registration of several hundred surgeons from all parts of the Southeast, a number of surgical celebrities from all parts of the United States here to speak to us, magnificent scientific exhibits, continuous moving pictures of surgical procedures, and an elaborate commercial display, together with our own journal, *THE SOUTHERN SURGEON*, is the fulfillment of this dream of our most efficient secretary, Dr. B. T. Beasley.

We are all familiar with the story of the old man, a traveller, who having crossed a deep chasm stopped on the other side to build a bridge over it, and when asked why he wasted his time bridging the chasm he had already crossed, said "There is a young man who is coming this way, and I am building to make his passage easier". So, I look upon the pioneer surgeons of the Southeast as Bridge

Presidential Oration delivered before the banquet of The Southeastern Surgical Congress, Atlanta, March 7, 1939.

Builders, each contributing perhaps a plank toward finishing a bridge for the benefit of the future generations who will pass this way.

Robert Morris, in his book *Fifty Years a Surgeon* telling of surgery in New York before the advent of antiseptics, says, "Dr. Bryant, who became very much up to date later, would at that time hold a knife between his teeth pirate-fashion while adjusting the tourniquet and then give the knife two or three quick strokes across the leather heel of his shoe in order to perfect the edge before amputating a leg".

The pioneer surgeons of the Southeast knew nothing of germs and believed in "laudable pus", but they observed that surgical patients who were scrubbed with home-made lye soap and plenty of hot water did well.

It has been said that surgery as a science really began with Louis Pasteur and his discovery of the microbe origin of disease, Lister's application of antiseptics to surgical wounds, and Crawford W. Long's discovery of the anesthetic properties of ether. These three events revolutionized the art of surgery, and we have made more progress in the past seventy-five years than during the previous fifteen hundred.

During the first century of the colonial era there was a scarcity of physicians in America, and there were no medical schools prior to 1765. There were only three thousand doctors in the thirteen original colonies and not more than two hundred of these held the degree of Doctor of Medicine. The number of practitioners in Georgia at that time was less than one hundred, and only two of these were graduated, William Parker and William Cocke, both of Savannah. (Today we have 2,756 practicing physicians in Georgia).

Considering the history of the eighteenth and nineteenth centuries we know that it was not convenient for American youth to go abroad to study, so the great majority of the earlier physicians studied under an older physician as a preceptor, and years later a few went abroad to complete their medical education in the great capitals of Europe. The profession of medicine was often combined with that of the ministry; few doctors limited themselves to medicine as a means of livelihood.

When we consider that there were no highways and few bridges over the streams, and the pioneer doctors rode horseback over trails in the wilderness and forded streams in all kinds of weather, eating and sleeping when possible, we may realize that the life of the pioneer doctor was not an easy one.

In summarizing the progress of surgery in the Southeast, I have taken the states that hold membership in our Congress, and then roaming over the hills and through the valleys to hamlets and cities, I have met for the first time some of the great Bridge Builders who have made contributions to the art of surgery. Briefly, I want to introduce to you a few of these pioneer surgeons.

VIRGINIA

Dr. Jesse Bennett, who was born in 1769, performed his first cesarean operation in the Valley of Virginia on Jan. 14, 1794. This was also the first successful cesarean operation in the United States. The patient was his own wife who had been in labor three days; another physician had been called to operate but had refused. Mrs. Bennett believing that she was going to die pleaded that her baby be saved. Dr. Bennett laid open the abdomen and uterus with one quick stroke of the knife. He removed both ovaries saying, "This shall be the last". He sutured the wound with strong linen thread. His wife survived the operation twenty-five years and the daughter lived to be 77 years of age.

Dr. John Peter Mettauer (1787-1875), from a family of famous surgeons, was reared in an atmosphere of culture. His father was a young French surgeon who came to this country with Lafayette during the American Revolution and remained in Virginia after the French troops had departed. Dr. Mettauer became professor of surgery at Washington College in Baltimore in 1835. He resigned a year later to return to his beloved native Virginia, where he spent the remainder of his life devoting all of his time to writing and practicing medicine. He wrote many essays on all branches of medicine and surgery, including lithotomy, vesicovaginal fistula, perineorrhaphy and trachelorrhaphy. He was the first surgeon on record to use metal suture material—he first used lead wire which he made by hand, and later silver wire in repairing vesicovaginal fistulas; he then inserted a silver catheter into the urethra and fixed it in position. He was a country doctor but a gifted gynecologist and surgeon. He had no anesthetics and fashioned most of his instruments. He had no well-equipped hospital but operated in his patient's room, often at night with only a candle for light. His first successful operation for vesicovaginal fistula was in 1838, eleven years prior to that of Sims. His operation for cleft palate was the first in this country. He performed over four hundred operations for stone in the bladder, and over eight hundred operations for cataract. He lived to be 88 years old and performed three major operations the last week of his life.

In 1829 the first successful excision of the cervix uteri was performed by Dr. John B. Strachan of Virginia.

Dr. R. M. Taliaferro, a rural practitioner in Virginia, performed the first episiotomy in the United States in 1851. The baby's head had been on the perineum eight hours with no progress.

Dr. Hunter Holmes McGuire (1835-1900) was surgeon on the staff of General Stonewall Jackson during the War between the States. He was professor of surgery at the Medical College of Virginia in Richmond after the War. He was a great teacher: he saw things clearly and told them plainly. As a surgeon he was rapid, bold and dextrous. He did what he had to do quickly and then stopped. He was one of the first surgeons to accept the germ

theory, the first to do a suprapubic cystostomy for the relief of prostatic obstruction, and among the first to use Lister's carbolic spray, and to standardize surgical technic.

KENTUCKY

Ephraim McDowell (1771-1830) was born in Rockbridge County, Virginia. In 1782 he moved with his father to Danville, Kentucky, where he spent the remainder of his life. He studied medicine under local doctors for several months, and then went to Edinburgh, where he studied under John Bell, the foremost Scotch surgeon of his generation. He did not graduate, but in 1795 began practicing in the small town of Danville and performed with success every surgical operation then practiced. At that time surgeons in the best equipped hospitals hesitated to open the abdomen. Anesthesia and asepsis were words yet unborn, and yet Ephraim McDowell, a frontier country doctor, in 1809 opened the abdomen of Jane Todd Crawford and successfully removed a very large ovarian tumor. He explained the dangers of the operation and told his patient frankly that it was an experiment and had never been accomplished before anywhere. He dared to pioneer and succeeded. In Danville, there stand monuments both to Dr. McDowell and to Mrs. Crawford.

Samuel D. Gross, (1805-1884) is often referred to as the Master of American Surgery. He was the most conspicuous surgeon of his day. He invented many surgical instruments, perfected many surgical operations, and was a brilliant writer and teacher. He began practice in Louisville, and later moved to Philadelphia.

Benjamin W. Dudley of Kentucky had a record of 225 bladder stone operations with only three deaths. He was known as the greatest lithotomist of his day.

TENNESSEE

Dr. Patrick Vance, according to the records, was the first physician to locate in what is now Tennessee. He was a Scotch-Irishman who came to this country in 1754. He first located in Pennsylvania, later moved to North Carolina and then to Tennessee. Serving in the campaign against the Cherokee Indians in 1776, he devised a treatment for scalped persons. He used an awl to bore holes in the dry denuded skull until blood came, these holes sprouted granulations which spread out and covered the top of the head. The skin grew slowly and usually required about two years to heal.

Dr. W. H. Deaderick in February, 1810, successfully excised for tumor half of the lower jaw of a boy 10 years of age. This operation is without known precedent. Dr. Deaderick was an able, courageous and conscientious surgeon.

Dr. William J. Baker of Knoxville was a skilled physician and prominent surgeon. In 1856 he performed a hysterectomy which was the third operation of its kind in the United States. The operation was for fibroid tumors and metrorrhagia. The cervical stump was transfixed and ligated and fixed in the lower skin wound until the ligated portion sloughed and healed by granulation. The patient lived 34 years after the operation.

Among the prominent teachers of medicine of that day was Dr. W. D. Haggard, Sr. (1826-1901). He was professor of gynecology at the University of

Tennessee, and a founder of the Southern Surgical Association. He was the father of our present beloved Dr. Haggard.

Dr. Paul Fitsimmons Eve (1806-1877) of Nashville, was born near Augusta, Georgia. He was professor of surgery, Medical Department University of Georgia in Augusta, then professor of Louisville Medical College, and later was professor of surgery at the Missouri Medical College, and was professor of the Medical Department, University of Nashville at the time of his death. He was president of the American Medical Association, served as surgeon in the Polish war, and in the Confederate Army. He was a prolific writer and was at various times editor and publisher of numerous medical and surgical journals. He was a brilliant surgeon and teacher.

In 1855 Dr. Eve said to the graduating class "You have, Gentlemen, but commenced a science for the full acquisition of which a lifetime is too short. One demanding the concentration of the highest intellect, and the development of the best affections of the heart, of a profession worthy of the loftiest genius and the noblest powers of man, of a calling honored by Deity Himself, who when on earth consecrated it as a means of relieving suffering humanity."

Dr. Eve gave to the profession two distinguished sons, Paul, Jr., and Duncan Eve.

NORTH CAROLINA

The most heroic figure so far recorded in the medical annals of North Carolina is Edmund Strudwick, born in Orange County in 1802. He studied under Dr. James Webb and was graduated at the University of Pennsylvania in 1824. He returned to his native state "fired with enthusiasm and running over with energy." He was a country practitioner, but his strong point was surgery. He operated in Raleigh, Wilmington, Charlotte, Greensboro and other cities of the state. Many patients were sent to him from a great distance. He operated on numerous patients for cataract, and also stone in the bladder, both of which were probably more numerous at that time. His mortality was said to be very low. He also operated for breast cancer, strangulated hernia, lacerations, and other conditions. The crowning incident of this great man's life came when he was near 60 years of age. He was called to a neighboring county at night to perform an emergency operation. He went part of the way by rail, and was to finish the journey by buggy. The night was dark and cold and the road was rough. The horse became frightened, ran away and upset the buggy throwing the occupants out and breaking Dr. Strudwick's leg. He crawled to the side of the road and propped himself against a tree. He was found at daybreak and taken on to the patient's home where he operated upon a strangulated hernia successfully, sitting on the side of the bed, before he would permit his broken leg to be splinted. He died in 1879 at the age of 77.

SOUTH CAROLINA

Dr. Joseph Glover of Charleston was one of the pioneer surgeons of South Carolina. He removed the spleen in 1808; he also performed lithotomy, and successfully resected "an inverted uterus measuring 11 inches in length, 18 inches in circumference and weighing 5 pounds".

Dr. John King of Edisto Island in 1816 performed an unusual operation for extrauterine pregnancy, at or near full term, by cutting through the walls of the vagina and applying forceps. He delivered the child, saving both mother

and baby. He later published a book in 1818, on "An Analysis of the Subject of Extra-Uterine Foetation and of Retroversion of the Gravid Uterus", said to be the first book on the subject.

In May 1847, Dr. Henry R. Frost, following in the footsteps of Crawford W. Long, amputated a leg under ether anesthesia. Dr. John Bellinger in 1847, performed four laparotomies for tumor, three of which were successful. (This was before the day of antiseptics.) Dr. R. A. Kinloch of Charleston was first to do laparotomy for penetrating gunshot and stab wounds of the abdomen. Dr. Manning Simons in 1878, operated successfully for imperforate anus. Dr. W. T. Wragg reported in 1847, that he had used deer sinews for ligatures for the past ten years; this probably was the first use of animal tissue for this purpose.

Dr. James McFadden Gaston of Charleston, was successful in performing intestinal anastomoses in 1859. After a distinguished career in the Confederate Army, Dr. Gaston finally settled in Atlanta, where two of his grandsons are now practicing medicine.

Dr. Francis L. Parker of Charleston, was the first surgeon in the United States who obtained reunion of a divided nerve of large size by suture. The operation was performed three months after the injury. Dr. Parker in 1883, it is said, made a successful transplantation of the conjunctiva of a rabbit to the human eye.

FLORIDA

While Florida is old in years she is young in professional development, and while this article deals principally with surgeons I cannot refrain from mentioning one of Florida's doctors who has left his footprints in the sands of time. Dr. John Gorrie of Apalachicola, invented artificial ice. He might well be said to be a pioneer in air conditioning, as he was experimenting with compressed air in cooling wards containing fever patients, when he discovered a brick of artificial ice in the compressed air machine. He did not commercialize his discovery. His native state has honored him with a place in Statuary Hall in Washington. There is also a monument to Dr. Gorrie in the public square in Apalachicola.

ALABAMA

James Marion Sims (1813-1883) was born in Lancaster County, South Carolina. He was graduated in Charleston at the age of 21. He took post-graduate work at Jefferson Medical College in Philadelphia where he was graduated in 1835. He returned to his home in South Carolina and began the practice of medicine. Here he had only three patients, two of whom died. He then moved to Alabama and located near Montgomery. His first patient in Alabama had puerperal fever and died soon after Sims began treatment. He now had lost three out of four patients, a mortality of 75 per cent. His luck changed with his next patient, and his career became spectacular. He was first a country doctor and later he opened a private hospital in Montgomery. He operated on three slave women more than forty times before he cured the first of them of vesicovaginal fistula. He used metal sutures in his first successful case, which was in 1849. Until this time little was known and less was done to alleviate the suffering women had to endure.

Sims was the founder of modern gynecology. He introduced the famous Sims position and the Sims speculum. He later moved to New York and founded the Womans' Hospital and became the leading gynecologist of the world. He visited Europe several times and operated in Paris, London, Vienna, Rome, Berlin, Lisbon, Madrid, Brussels and St. Petersburg. He was employed by royalty and the highest society. While successful in the treatment of many diseases peculiar to the female sex, his reputation was built largely upon his cure of vesicovaginal fistula. He was president of the American Medical Association in 1876. His monument "erected by his professional friends, loving patients, and many admirers throughout the world" stands in Central Park facing the New York Academy of Medicine.

Dr. L. L. Hill of Montgomery, now living at 77 years of age, was the first surgeon in America successfully to suture the heart muscle following a stab wound. This patient was a colored boy. The operation was performed by lamplight on a kitchen table in a negro cabin in 1902.

MISSISSIPPI

Dr. J. M. Heard of West Point was one of the pioneer gynecologists of his state. He was noted for his method of cutting pessaries out of Tupelo gum to fit the individual case. He made his own instruments and he dared to do, under adverse circumstances, operations which he had never seen performed. He operated for ectopic pregnancy successfully. Later he was surgeon in the Confederate Army and had charge of a large hospital in Southern Alabama.

I am told that there were no hospitals in Mississippi prior to the Civil War, and that physicians who developed special surgical talent usually moved to New Orleans, Memphis, or Mobile.

LOUISIANA

Dr. Dubourg of New Orleans is said to have been the first surgeon in America to perform vaginal hysterectomy; he practiced in the thirties.

Dr. Charles A. Luzenberg (1805-1848) of New Orleans was the first surgeon to resect a portion of gangrenous intestine in strangulated hernia. He reconstructed the gut successfully.

Dr. Tobias G. Richardson (1827-1892) was the first successfully to amputate both legs at the hip joint at the same time. This was before the days of anesthesia and asepsis. He was president of the American Surgical Association in 1878.

Dr. Rudolph Matas of New Orleans, now in his eightieth year, at the age of 34 was made professor of surgery at Tulane School of Medicine. He has spent his life in surgical research and has devised so many useful operations that it would be tedious here to mention them all. It is at his request that I mention only his outstanding contribution to surgery of the blood vessels: simplifying the cure of aneurysm by the principles involved in the modern treatment of aneurysms and his insistence upon the security of studying the condition of the collateral and peripheral circulations before attempting the permanent occlusion of the great arteries. Dr. Matas was the first surgeon in America to use spinal anesthesia.

Dr. C. Jeff Miller (1874-1935) of New Orleans, President of The Southeastern Surgical Congress at the time of his death, was a distinguished gyne-

cologist and teacher. He was professor of gynecology at Tulane University Medical School. Dr. Alton Oschner said of him, "As a teacher he was unsurpassed, primarily because of his profound knowledge of the subject, and also because of his lucid and superb presentation. Even during the most trying operative procedures he lectured clearly, and his operative clinics were always filled to their maximum capacity."

GEORGIA

Dr. Willis F. Westmoreland, Jr. (1865-1935) of Atlanta, probably was the first to introduce antiseptic surgery in Georgia. He was graduated in 1885, went to New York and found antiseptics used only at the Roosevelt Hospital, although Lister had come to New York in 1877 and demonstrated his carbolic spray. It was not until 1890 that antiseptics and aseptic surgery was generally accepted by the profession. Dr. Westmoreland returned to Atlanta and was refused the privilege of demonstrating his new methods. His illustrious father, then professor of surgery at the Atlanta Medical College, and the other older members of the faculty refused to believe that there were little fairies in surgical wounds called germs, they still believed in laudable pus. Young Westmoreland finally persuaded his father to remove his Prince Albert coat, roll up his sleeves, don a woman's apron, scrub his hands and soak them in a solution of 1:1000 bichloride of mercury, which at that time had replaced the carbolic solution of Lister. Dr. Westmoreland then performed the operation, removing a bone tumor from the upper arm, in the old amphitheatre and on the same wooden table where cadavers were demonstrated. This patient's wound was not dressed the next day as was the custom, but several days later when the dressing was removed, the wound had healed by first intention much to the surprise of Dr. Westmoreland, Sr. When the old gentleman looked at the healed wound he turned to his son, who at that time was only 21 years of age and said "My son, I take off my hat to you, you have done it." After a moment of tense silence he turned to the class of students, raised both hands as high as his head with the palms outward and cried in a voice almost overcome with emotion "My God! My God! think of the people who'd be alive today had I known of this years ago!" Thus was the era of antiseptic surgery introduced into Georgia.

Dr. L. A. Dugas of Augusta, described his famous test for dislocation of the shoulder in 1856. He was a surgeon in the Confederate Army and used tar water as a preventive for hospital gangrene; this was about the same time Lord Lister was using the carbolic spray in England and Scotland.

Crawford W. Long (1815-1878) gynecologist, obstetrician and surgeon, in 1842 was the first to perform an operation with sulphuric ether as an anesthetic. He also used ether in obstetrics on his own wife in 1845. His gift of anesthesia to the world entitles him to a place among the immortals in all branches of surgery everywhere. His statue was placed in the Statuary Hall in Washington as the discoverer of anesthesia.

Dr. Robert Battey (1828-1895) was born in Augusta. He was first a surgeon in the Confederate Army, then professor of obstetrics at the Atlanta Medical College for a short time. Later he located at Rome, where he practiced the remainder of his life. He originated the operation of oophorectomy in 1872 for painful menstruation and neurotic symptoms: his first operation

was successful and he repeated it many times, it became known as "Battey's operation."

Dr. H. M. Branham, Brunswick, in 1890, discovered and reported that when an arteriovenous aneurysm had pressure applied to the fistula it slowed the heart's action and produced dizziness, which disappeared when the pressure was released. This has been handed down in surgical literature as "Branham's sign", and few of the younger generation realize that this phenomenon was first noted by a small town Georgia doctor who died only a few months ago.

Haggard said "Surgery has a noble heritage. Its disciples are the intellectual descendants of all the great minds who have glorified time. There has been an apostolic succession in surgery from the Father of Medicine to each bishop in our priesthood to the latest devotee who enters the sacred portals. The immortal Lister gave a new heaven to medicine and a new earth to surgery. His carbolic dressing due to Pasteur, were more potent than the sweet smelling spices that Rebecca poured upon the wounds of Ivanhoe."

Three of our component states have seen fit to place a statue of a famous surgeon in the National Statuary Hall in Washington. Ephraim McDowell of Kentucky, John Gorrie of Florida and Crawford W. Long of Georgia.

The South is credited with the first ovariectomy, the first gastrotomy, the first removal of the coccyx, the first ligation of the carotid artery, the first successful operation for vesicovaginal fistula, the first in America to remove a rib and drain empyema and abscess of the liver, the first to operate for ectopic pregnancy, the first to do a vaginal hysterectomy, the first to operate for cleft palate, the first to operate for club foot, the first to amputate at the hip joint successfully, the first to use ether as anesthetic was a Southerner, the first to discover the cause and to work out a scheme for the relief of yellow fever was a Southerner. The man who made it possible to build the Panama Canal was a Southerner; the pioneer in air conditioning by using compressed air in fever wards was a Southerner.

We cannot all be brilliant pioneer surgeons and teachers, but we can, by sympathy, kindness and close attention to our great obligation to suffering humanity, live useful and honorable lives.

T. C. DAVISON, M. D.

BOOK REVIEWS

The Editors of THE SOUTHERN SURGEON will at all times welcome new books in the field of surgery and will acknowledge their receipt in these pages. The Editors do not, however, agree to review all books that have been submitted without solicitation.

INFECTIONS OF THE HAND: A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand and Forearm. By ALLEN B. KANAVAL, M. D., Sc. D. Late Professor of Surgery, Northwestern University Medical School, Chicago; Attending Surgeon, Wesley Memorial and Passavant Memorial Hospitals, Chicago. Seventh Edition, Thoroughly Revised. 503 pages, with 229 illustrations, many in color. Price \$6. Philadelphia: Lea & Febiger, 1939.

This revision of Dr. Kanavel's famous book, completed shortly before his death, will stand as a lasting monument to his memory. The book is classic for its illustrations, many of which were made with the painstakingly injected specimens Dr. Kanavel and his associates prepared. Many of the illustrations are in color and show careful attention to anatomic detail, which Dr. Kanavel believed to be a prerequisite to the treatment of infections of the hand. Each individual section is adequately illustrated with material pertinent to that aspect of the subject.

Dr. Kanavel and his associates worked out the tendon sheaths, fascial spaces, and the spread of infection from these by means of the injection of specimens with later dissection. They were thus able accurately to determine the avenues by which infection spreads, and to determine where incisions are best made to drain the spaces and tendon sheaths. These experiments were done with great care and represent many hours of hard work.

The chapters on the prophylactic and general treatment of injuries are well written and contain excellent material. Those at the close of the book on physical therapy and treatment after the infection is cleared up, are well illustrated and form a valuable part of the book.

UROLOGY. By DANIEL N. EISENDRATH, M. D., Consulting Urologist to the American Hospital, Paris, France; Formerly Attending Urologist, Michael Reese and Cook County Hospitals; Assistant Professor of Surgery (Genito-Urinary) Rush Medical College of the University of Chicago, and HARRY C. ROLNICK, M. D., Attending Urologist, Michael Reese, Mt. Sinai and Cook County Hospitals, Chicago; Formerly Clinical Professor of Urology, Loyola University Medical School. Fourth edition, entirely revised and reset. 1,061 pages, with 750 black and white illustrations and 12 in color. Price, \$10. Philadelphia, Montreal, London: J. B. Lippincott Company, 1938.

There are many things about this book which strike the eye, but one of the most outstanding is the large number of illustrations. They are clear and show exceptionally well what is expected of them. The color plates are particularly good, because the colors are almost the same as those seen in the actual specimen.

Part I deals with the embryology, anatomy, and physiology of the genito-urinary system. It is completely up-to-date in its content and is simply and

clearly written. The sections devoted to laboratory procedures and minor office technic are very well written. Most of the procedures described are simple, yet they lose nothing in accuracy because of their simplicity. It is just such factors that place Part I among the best in the book.

Part II has to do with gonorrhea and the venereal ulcers. Without waxing verbose, the authors have covered gonorrhea in all of its manifestations adequately. Their treatment is simply given, yet covers all aspects—general hygienic measures as well as specific and local therapy. Early syphilis and the chancre are discussed from their clinical course, characteristics and differential diagnosis, and several technics of treatment are outlined. These five chapters with the ones on gonorrhea in the female and the granulomas make this the outstanding part of the book for the reviewer.

In other parts of the book the authors take up the divisions of the urinary tract with the diseases peculiar to them. They not only describe the common things but also the rarities one occasionally finds. The sections on anomalies at the beginning of each division have been brought up-to-date by reviews and frequent citations of the literature. Such adequate handling of these conditions is not often found in the usual textbook of urology.

There is a section devoted to urology in females and in children. In many books discussion of this important part of a urologist's practice is inadequate. Eisendrath and Rolnick have discussed completely urology in the child and the section on enuresis is particularly good.

The discussion of hematuria in the chapter devoted to pathologic urinary findings is clearly written. It gives all systemic, genito-urinary, and other causes of hematuria, thus simplifying one's differential diagnosis in many ways. Anuria is also adequately treated.

The part devoted to surgery is excellently written. Only the operations most frequently used are given and their exposition is simple and clear cut. The accompanying illustrations show the steps in the operations very clearly. The operations range from a simple dorsal slit to a nephrectomy. This part forms a very useful adjunct to the medical section of the book.

Although the book is written in an easy flowing style, it seems bulky for the student's use. On the other hand, its completeness and its concise simplicity make it an excellent reference book for the practitioner and student. It is without doubt one of the finest books ever written on the subject.

ANEMIA IN PRACTICE. PERNICIOUS ANEMIA. By WILLIAM P. MURPHY, A. B., M. D., Associate in Medicine, Harvard Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston, etc. 344 pages, with 46 illustrations. Price, \$5. Philadelphia and London: W. B. Saunders Company, 1939.

This book presents a discussion of the various types of anemia with a good chapter on differential diagnosis, but the greater part consists of an excellent treatise on pernicious anemia. There are several chapters devoted to laboratory procedures, including blood transfusions. The subject is well covered in all of its aspects.

HOW TO CONQUER CONSTIPATION. By J. F. MONTAGUE, M. D., Editor-in-Chief of Health Digest, etc., etc. 244 pages. Price, \$1.50. Philadelphia: J. B. Lippincott Company, 1938.

This little book, which is easily read, is primarily intended for the laity and as such contains many sound ideas. Some chapters are not so good, but even these contain nothing harmful.

PATHOLOGICAL TECHNIQUE: A PRACTICAL MANUAL FOR WORKERS IN PATHOLOGICAL HISTOLOGY, INCLUDING DIRECTIONS FOR THE PERFORMANCE OF AUTOPSIES AND FOR MICROPHOTOGRAPHY. By FRANK BURR MALLORY, A. M., M. D., S. D., Consulting Pathologist to the Boston City Hospital, Boston, Mass. 434 pages, with 14 illustrations. Price, \$4.50. Philadelphia and London: W. B. Saunders Company, 1938.

Dr. Mallory has written a very complete book upon the subject. It contains sections on general histologic technic, special methods, and an important section on autopsies. There is also an excellent chapter on the photography of specimens, gross and microscopic. It will be valuable as a guide and reference book for anyone who is in the field of pathology or who contemplates establishing a pathological laboratory.

THE CEREBROSPINAL FLUID. By H. HOUSTON MERRITT, M. D., Assistant Professor of Neurology, Harvard Medical School; Director of the Cerebrospinal Fluid Laboratory, Boston City Hospital; and FRANK FREMONT-SMITH, M. D., Formerly Assistant Professor of Neuropathology, Harvard Medical School; formerly Director of the Cerebrospinal Fluid Laboratory, Boston City Hospital, and with a Foreword by JAMES B. AYER, M. D. 333 pages, with 17 illustrations. Price, \$5. Philadelphia and London: W. B. Saunders Company, 1937.

Progress in medical science is often inspired by brilliant ideas, but real progress must be correlated with facts. This book presents the facts about the cerebrospinal fluid in a large variety of conditions: The number is sufficiently large and the diagnostic study has been sufficiently thorough to be sure that here may be found facts.

A MANUAL OF FRACTURES AND DISLOCATIONS. By BARBARA BARTLETT STIMSON, A. B., M. D., Med. Sc. D., F. A. C. S., Associate in Surgery in the College of Physicians and Surgeons, Columbia University, New York City; Assistant Attending Surgeon to the Presbyterian Hospital, New York City. 214 pages, with 95 illustrations. Price, \$2.75. Philadelphia: Lea & Febiger, 1939.

While Dr. Stimson's handbook is not designed to replace the larger, encyclopediac works on fractures and dislocations, the material is well organized and its conciseness is wholly admirable. The illustrations are diagrammatic; but so carefully prepared that they should suffice in the large majority of cases. In addition to the general discussion, each type of fracture is discussed as to occurrence, pathology, displacement, treatment, time of immobilization and prognosis. It is a handy book to have around the office.

PRINCIPLES AND PRACTICE OF OBSTETRICS. By JOSEPH B. DeLEE, A. M., M. D., Professor of Obstetrics and Gynecology, Emeritus, University of Chicago; Consultant in Obstetrics, Chicago Lying-in Hospital and Dispensary; Consultant in Obstetrics, Chicago Maternity Center. Seventh Edition. 1,200 pages with 1,277 illustrations on 985 figures, 271 in colors. Price, \$12. Philadelphia and London: W. B. Saunders Company, 1938.

This book is the Osler of obstetrics. Dr. DeLee has revised his book bringing it up-to-date. He has given the obstetrician, and other physicians who do obstetrics, the advantage of his forty years' experience in obstetric technic.

The mechanism of labor has been given special attention and the importance of home obstetrics has been emphasized, giving the methods which are safest in the hands of "the obstetrician to the people." Conservatism and intelligent expectancy have been the keynote throughout.

The chapter on obstetric analgesia has been enlarged and the work of Caldwell, Moley and D'Esopo has been added to the chapter on contracted pelvis. The sulfanilamide treatment for puerperal sepsis has been given and the new scalp traction forceps in placenta previa has been described.

CLASSIC DESCRIPTIONS OF DISEASE. By RALPH H. MAJOR, M. D., Professor of Medicine, University of Kansas School of Medicine. Second Edition, Revised and Enlarged. 727 pages, with 137 illustrations. Price, \$5.50. Springfield and Baltimore: Charles C. Thomas, Publisher, 1939.

A doctor remarked the other day that a book on dietetics written last summer was now quite out of date,—nicotinic acid and other refinements of the vitamins had been left out. This remark illustrates the ephemeral nature of much medical literature, at least in so far as regards treatment and theory. However, when a careful observer describes facts observed those facts remain facts always.

These classic descriptions of diseases, these accurate clinical pictures, remain as clear as when they were first observed. They therefore serve to aid one in diagnosis. They may also serve as models in scientific English. The selections range from the Ebers Papyrus of more than 3,000 years to papers by Herrick and other living clinicians.

The book cannot be read at a sitting. Indeed, it is recommended for browsing purposes, and for reference; it is inspiring when one has a case slightly out of the ordinary, to read, if not the first definite description of the condition, at least one of the earliest good ones, and the descriptions in this book are among the clearest that have ever been written. Perhaps certain conditions receive more space than others on account of the author's own interests,—but this is the only basis for adverse criticism.

It has been said that this is a book that belongs in every physician's five-foot library. The reviewer would be even stronger,—it belongs in every doctor's library, and no book will be of more enduring value.

